SAMSUNG

DIGITAL LASER PRINTER

SCX-4500

SCX-4500/XAZ

Basic Model : SCX-4500

SERVICE Manual

DIGITAL LASER PRINT

SCX-4500

The keynote of Product

Slim Size 3 in 1 MFP (SCX-4500)

- Printing Speed : 16PPM(A4), 17PPM(Ltr)
- Printing Resolution : 600 x 600dpi
- Interface : USB 2.0
- OPE : Touch Sensor
- Scanner : FLAT-BED CIS(600dpi)
- Scan Resolution(Optiacl) : 600 x 2,400dpi
- Paper Input Capacity : 100 sheets
- Paper Output Capacity : 30 sheets
- Engine Life : 50,000 Pages
- Toner : Initial(1K) / Sales(2K)

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1. Precautions

In order to prevent accidents and to prevent damage to the equipment please read the precautions listed below carefully before servicing the printer and follow them closely.

1.1 Safety Warning

(1) Only to be serviced by appropriately qualified service engineers.
High voltages and lasers inside this product are dangerous. This printer should only be serviced by a suitably trained and qualified service engineer.

(2) Use only Samsung replacement parts
There are no user serviceable parts inside the printer. Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.

(3) Laser Safety Statement
The Printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class 1(1) laser products, and elsewhere, it is certified as a Class I laser product conforming to the requirements of IEC 825. Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

Warning >> Never operate or service the printer with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes. When using this product, these basic safety pre-cautions should always be followed to reduce risk of fire, electric shock, and injury to persons.

CAUTION - INVISIBLE LASER RADIATION □ WHEN THIS COVER OPEN. □ DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG, □ WENN ABDECKUNG GEÖFFNET. □ NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS □ D'OUVERTURE. EXPOSITION DANGEREUSE □ AU FAISCEAU.□

ATTENZIONE - RADIAZIONE LASER INVISIBILE IN CASO DI □ APERTURA. EVITARE L'ESPOSIZIONE AL □ FASCIO.

PRECAUCION - RADIACION LASER IVISIBLE CUANDO SE ABRE. □ EVITAR EXPONERSE AL RAYO.

ADVARSEL. - USYNLIG LASERSTRÅLNING VED ÅBNING, NÅR □ SIKKERHEDSBRYDERE ER UDE AF FUNKTION. □ UNDGÅ UDSAETTELSE FOR STRÅLNING.

ADVARSEL. - USYNLIG LASERSTRÅLNING NÅR DEKSEL □ ÅPNES. STIRR IKKE INN I STRÅLEN. □ UNNGÅ EKSPONERING FOR STRÅLEN.

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL □ ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. □ BETRAKTA EJ STRÅLEN. STRÅLEN ÄR FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA □ OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASER-□ SÄTEILYLLE ÄLÄ KATSO SÄTEESEEN.

注 意 - 严禁渴开此盖, 以免激光泄露灼伤

주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로 주의하십시오.

1.2 Caution for safety

1.2.1 Toxic material

This product contains toxic materials that could cause illness if ingested.

(1) If the LCD control panel is damaged it is possible for the liquid inside to leak. This liquid is toxic. Contact with the skin should be avoided, wash any splashes from eyes or skin immediately and contact your doctor. If the liquid gets into the mouth or is swallowed see a doctor immediately.

(2) Please keep toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor.

1.2.2 Electric Shock and Fire Safety Precautions

Failure to follow the following instructions could cause electric shock or potentially cause a fire.

(1) Use only the correct voltage, failure to do so could damage the printer and potentially cause a fire or electric shock.

(2) Use only the power cable supplied with the printer. Use of an incorrectly specified cable could cause the cable to overheat and potentially cause a fire.

(3) Do not overload the power socket, this could lead to overheating of the cables inside the wall and could lead to a fire.

(4) Do not allow water or other liquids to spill into the printer, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the printer these could cause a short circuit leading to an electric shock or fire hazard..

(5) Never touch the plugs on either end of the power cable with wet hands, this can cause electric shock. When servicing the printer remove the power plug from the wall socket.

(6) Use caution when inserting or removing the power connector. The power connector must be inserted completely otherwise a poor contact could cause overheating possibly leading to a fire. When removing the power connector grip it firmly and pull.

(7) Take care of the power cable. Do not allow it to become twisted, bent sharply round corners or other wise damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire or exposed cables could cause an electric shock. Replace a damaged power cable immediately, do not reuse or repair the damaged cable. Some chemicals can attack the coating on the power cable, weakening the cover or exposing cables causing fire and shock risks.

(8) Ensure that the power sockets and plugs are not cracked or broken in any way. Any such defects should be repaired immediately. Take care not to cut or damage the power cable or plugs when moving the machine.

(9) Use caution during thunder or lightening storms. Samsung recommends that this machine be disconnected from the power source when such weather conditions are expected. Do not touch the machine or the power cord if it is still connected to the wall socket in these weather conditions.

(10) Avoid damp or dusty areas, install the printer in a clean well ventilated location. Do not position the machine near a humidifier. Damp and dust build up inside the machine can lead to overheating and cause a fire.

(11) Do not position the printer in direct sunlight. This will cause the temperature inside the printer to rise possibly leading to the printer failing to work properly and in extreme conditions could lead to a fire.

(12) Do not insert any metal objects into the machine through the ventilator fan or other part of the casing, it could make contact with a high voltage conductor inside the machine and cause an electric shock.

1.2.3 Handling Precautions

The following instructions are for your own personal safety, to avoid injury and so as not to damage the printer

(1) Ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall.
(2) The printer contains many rollers, gears and fans. Take great care to ensure that you do not catch your fingers, hair or clothing in any of these rotating devices.
(3) Do not place any small metal objects, containers of water, chemicals or other liquids close to the printer which if spilled could get into the machine and cause damage or a shock or fire hazard.
(4) Do not install the machine in areas with high dust or moisture levels, beside on open window or close to a humidifier or heater. Damage could be caused to the printer in such areas.
(5) Do not place candles, burning cigarettes, etc on the printer, These could cause a fire.

1.2.4 Assembly / Disassembly Precautions

Replace parts carefully, always use Samsung parts. Take care to note the exact location of parts and also cable routing before dismantling any part of the machine. Ensure all parts and cables are replaced correctly. Please carry out the following procedures before dismantling the printer or replacing any parts.

(1) Check the contents of the machine memory and make a note of any user settings. These will be erased if the mainboard or network card is replaced.
(2) Ensure that power is disconnected before servicing or replacing any electrical parts.
(3) Disconnect printer interface cables and power cables.
(4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.
(5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.
(6) Take care not to drop any small parts into the machine.

1.2.5 Disregarding this warning may cause bodily injury

(1) Be careful with the high temperature part.
The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser to cool down before disassembly.

(2) Do not put finger or hair into the rotating parts.
When operating a printer, do not put hand or hair into the rotating parts (Paper feeding entrance, motor, fan, etc.). If do, you can get harm.

(3) When you move the printer.
This printer weighs 8.6kg including toner cartridge and cassette. Use safe lifting and handling techniques. Use the lifting handles located on each side of the machine. Back injury could be caused if you do not lift carefully.

(4) Ensure the printer is installed safely.
The printer weighs 8.6Kg, ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

(5) Do not install the printer on a sloping or unstable surface. After installation, double check that the printer is stable.

1.3 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called “Electrostatically Sensitive (ES) Devices”, or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor “chip” components.

The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

Caution >>Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1. Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.
3. Use only a grounded tip soldering iron to solder or desolder ESDs.
4. Use only an “anti-static” solder removal device. Some solder removal devices not classified as “anti-static” can generate electrical charges sufficient to damage ESDs.
5. Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.
7. Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
8. Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.
9. Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one’s foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

2. Product specification and feature

2.1 Product Specifications

2.1.1 Product Overview

Printer

- 16ppm (A4) / 17ppm (Ltr.)
- USB 2.0
- 100 sheet cassette tray
- Up to 600 x 600 dpi

Copy

- FCOT : Less than 15 sec
- 50 to 199% zoom range
- Multi copy : 1~99
- 16ppm (A4) / 17ppm (Ltr.)

Scan

- Resolution : 600x2400 dpi (optical)
  4800x4800 dpi (enhanced)
- 256 levels gray scale
- Up to 600 x 600 dpi

2.1.2 Specifications

• Product Specifications are subject to change without notice. See below for product specifications.

2.1.2.1 General Spec.

NO	SPEC.		SCX-4500
1	SIZE(WxDxH)		332*393*164.5mm
	BOX SIZE(WxDxH)		421*553*261mm
2	NOISE	WARMING UP	43dBA
		READY	38dBA
		PRINTING/COPYING	45dBA
3	WEIGHT	NET(Inc. CRU)	9.3kg
		GROSS(Inc. PACKING)	11.5kg

Item	Specification and Description
Warm up	Less than 15 Seconds
CPU	Chorus II 66Mhz Risc
Device Memory	8 MB (Non-extendable)
Display	13 X 5 LED Matrix
Interface	USB 2.0
Power rating	AC 110~127V or AC 220~240V See the Rating label on the machine for the correct voltage, frequency (hertz) and type ofcurrent for your machine
Power consumption	Average operation mode : Less than 350W Sleep mode : less than 8.12W
Operating environment	Temperature : 10°C to 32°C Humidity : 20% to 80% RH
Maintenance Cycle	Paper Feeding Roller : 50K Pages Print Transfer Roller : 50K Pages Print Fuser : 50K Pages Print
Product Life	50K
Toner Cartridge Life (ISO 19752 Standard Pattern)	initial : 1000 Pages High Yield : 2000 Pages
Duty cycle	Monthly print volume : Up to 4000 pages

2.1.2.2 Printer Spec.

1) Printing

Item	Specification and Description
Paper Size	Width = 105 ~ 216 mmLength = 148.5mm~297mm
Paper In Capacity	Cassette : 100 sheet (75g/m©˜,20lb)
Paper Out Capacity	30 sheets(75g/m©˜,20lb)
Printing Method	Laser Beam Printing
Effective Printing Width	208 mm
Printing Resolution	600 X 600 dpi
Printing Speed	16 ppm(A4)/17 ppm(Ltr)
FPOT	Standby 12 sec(5% Text) Power save 15 sec
Emulation	SPL(GDI)
Toner Check Sensor	None
Operating System	Windows 2000/XP/2003/Vista Mac. 10.3/10.4, Various Linux OS
PC interface	USB 2.0
Toner Save	Yes

2) PC Interface

Item	Specification and Description
USB	2.0
USB	No cable included (Note : SEC will NOT supply any of interface cable.)
Minimum PC Spec	Pentium2 400Mhz 64MB RAM Hard Disk : 300 free disk space

3) Copy

Item	Specification and Description
Speed	SDMC [Single Document Multiple Copy(Text,Mixed Mode)] : 17 CPM/Ltr, 16 CPM/A4 SDMC [Single Document Multiple Copy(Photo Mode)] : 17 CPM/Ltr, 16 CPM/A4
Resolution	Text, Mixed : 600 X 300 Dpi (PLATEN) Photo : 600 X 600 Dpi (PLATEN)
FCOT	Power Save : 15 Seconds(Platen) Stand-by : 15 Seconds(Platen)
Gray	256 Levels
Zoom Range	50~ 199 %
Multi Copy	1~99
Preset	Yes
Contrast	5 Level LED Matrix
Copy Mode	Text/Mixed/Photo
Collation Copy	NA
N-up Copy	NA
Auto Fit Copy	NA
Clone	NA
Poster	NA
2 side copy	NA

4) Scan

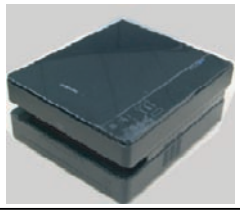
Item	Specification and Description
Compatibility	TWAIN standard/ WIA standard
Scan Method	Color CIS
Color Scan	Yes
Resolution	Optical : 600 X 2400 dpi / Enhanced : 4800 X 4800 dpi
PC Scan Speed	Lineart/Halftone : 15 sec / Gray : 30 sec / Color : 75 sec
Gray Scale	256 Levels
Effective Scanning Width	208 mm(8.2 inches)
Effective Scanning Length	PLATEN 297 mm(11.7 inches)
Scan To	E-mail, Image, OCR, WEB <= SmarThru IV

5) Accessory

Item	Specification and Description
Quick Set-Up guide	Yes
Owners Manual	Yes, 1CD User guide
Bundle s/w	SmarThru 4
Toner Cartridge	1 EA
Drum Unit	N/A
Power Cable	Yes
In Out Guide	No
Printer Cable	No
USB Cable	No(Except Korea)

2.1.3 Model Comparison Table

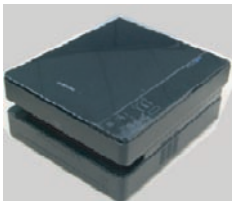
■ Model (SEC)

		Laser MFP SCX-4500	Laser Printer ML-1630
			
General	Size (W*D*H)	332*393*164.5mm	332*375.6*121.5mm
	Input Capacity	100 sheets	←
	Output Capacity	30 sheets	←
	Engine Life	50,000 sheets	←
	Toner	2K (Initial 1K)	←
	Interface	USB 2.0	←
	Dimension (W x D x H)	Max 45 dBA	←
Printer	Speed	16ppm(A4)	←
	FPOT	Less than 15 sec	Less than 15 sec
Copy	Resolution	600x2400 dpi	X
	Speed	16cpm(A4)@SDMP	X
Scan	Resolution	600 dpi	X
	Scan Module	Color CIS	X

■ Mech Comparison (SCX-4500/ML-1630)

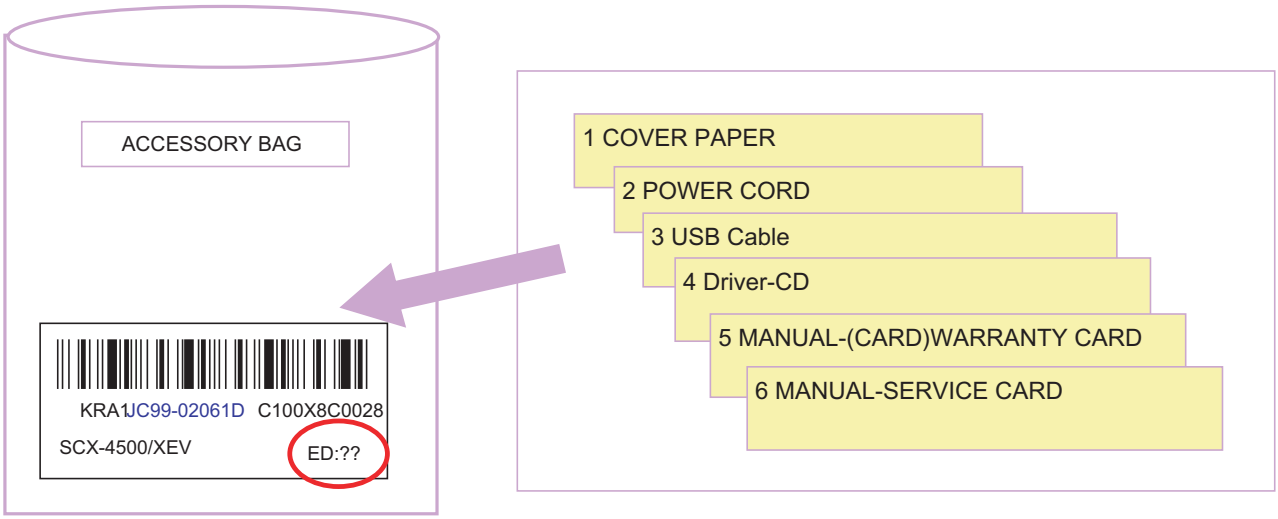
UNIT	Part	Logan	Swan
		SCX-4500	ML-1630
SYSTEM	ENGINE	16PPM(A 4), 17PPM(Ltr)	←
	SCANNER	FLAT-BED CIS(600dpi)	X
	COVER	Emotional Design	←
	FUSER	FPOT(Sleep) 15sec ↓	←
	CASSETTE	100매 CST TYPE	←
	DRIVER	Noise 45dBA ↓	←
	FEED	Multi-Feed-Idle	←
OPE	Touch Button	Touch Button	←
	LED Display	13*5 LINE Display	←

■ Competitor Model

		Samsung SCX-4500	Brother DCP-7020	HP LJ-1005
				
General	Size (W*D*H)	332*393*164.5mm	432*395*294mm	437*363*308mm
	Input Capacity	100 sheets	250 sheets	150 sheets
	Output Capacity	30 sheets	100sheets	100 sheets
	Engine Life	50,000 sheets	-	-
	Toner	2K (Initial 1K)	2.5K(drum 12K)	2K
	Interface	USB 2.0	USB 1.1, Parallel	USB 2.0
	Dimension (W x D x H)	Max 45 dBA	Max 53dBA	Max 49dBA
Printer	Speed	16ppm(A4)	20ppm(A4)	14ppm(A4)
	FPOT	Less than 15 sec	10sec (from ready)	15 sec
Copy	Resolution	600 dpi	600 dpi	600 dpi
	Speed	16cpm(A4)	16cpm(A4)	16cpm(A4)
Scan	Resolution	600 dpi	600 dpi	600 dpi
	Scan Module	Color CIS	Color CIS	Color CIS

2.1.4 ACCESSORY

No.	Item	Code	Quantity
1	INA-ACESSORY	JC99-02061D	-
2	PE-BAG	6902-000809	1
3	LABEL(P)-BLANK 90*25	JC68-01584A	1
4	COVER PAPER	JC61-02123A	1
5	POWER CORD	3903-000042	1
6	USB Cable	JC39-00001A	1
7	Driver-CD	JC46-00348A	1
8	MANUAL-(CARD)WARRANTY CARD	JC68-00690A	1
9	MANUAL-SERVICE CARD	JC68-00421A	1

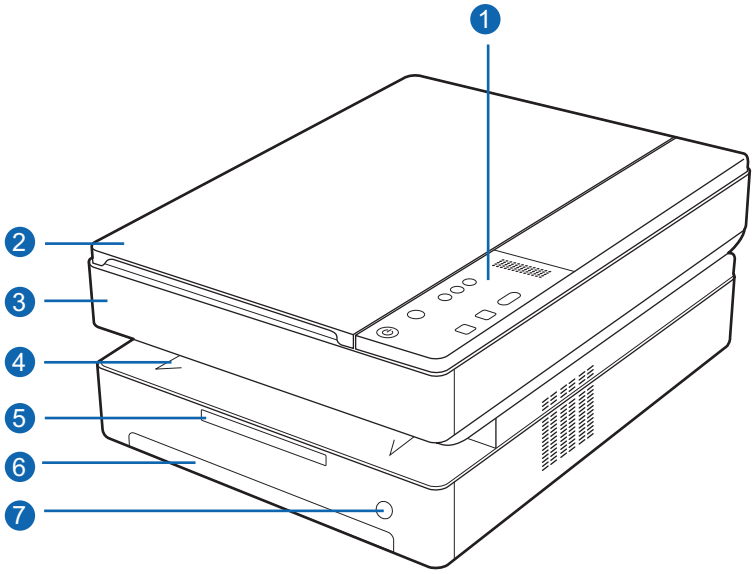


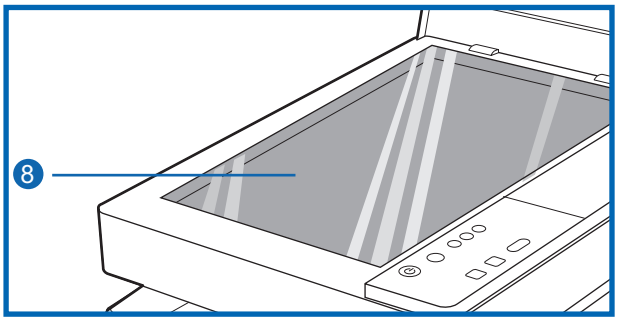
2.2 Summary of Product

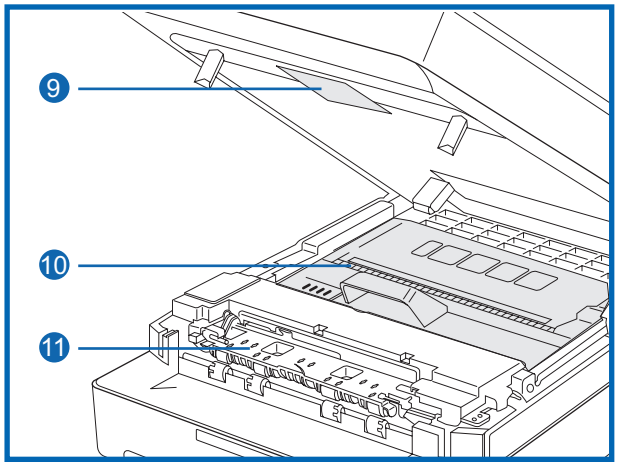
This chapter describes the functions and operating principal of the main component.

2.2.1 Printer Components

2.2.1.1 Front View

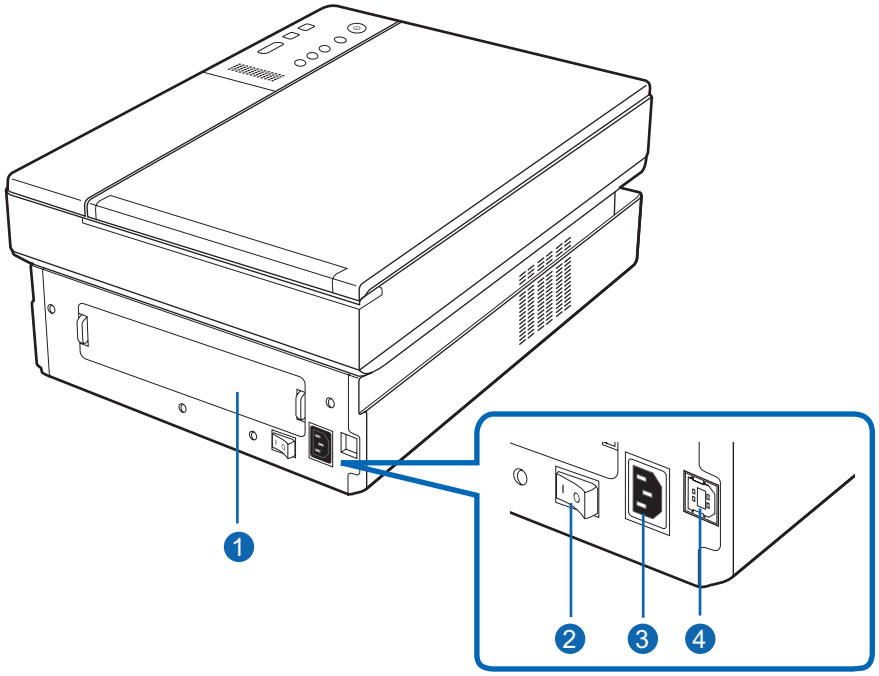






1	control panel	7	tray open button
2	scanner lid	8	scanner glass
3	top cover	9	top cover lever
4	output tray	10	print cartridge
5	output support	11	inner cover
6	tray		

2.2.1.2 Rear View



1	rear cover	3	power receptacle
2	power switch	4	USB port

2.2.1.2(a) Feeding Section

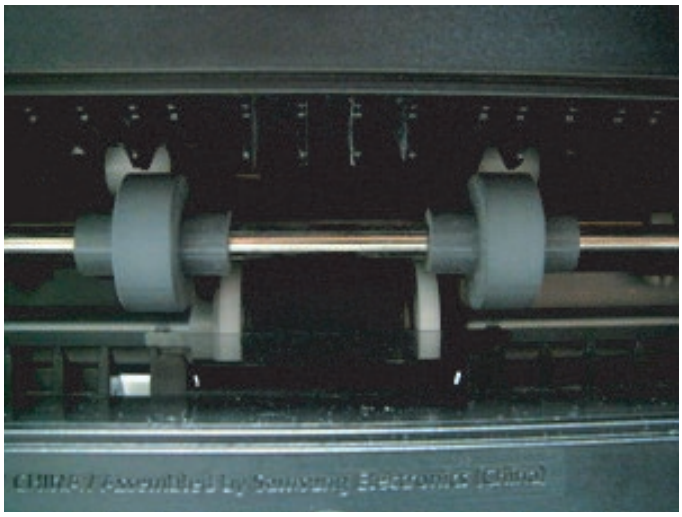
· Feeding Method : Universal Cassette Type

· Feeding Standard : Center Loading

· Feeding Capacity : Cassette 100 Sheets(75g/㎡, 20lb Paper Standard)
Cassette 1 Sheet(Paper, OHP, etc.)

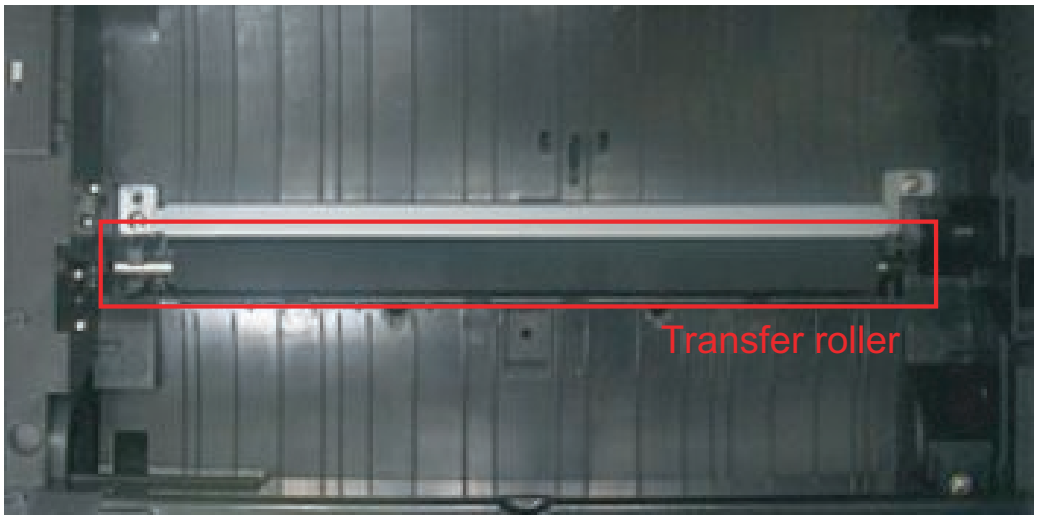
· Paper Detecting Sensor : Photo Sensor

· Paper Size Sensor : N/A



2.2.1.2(b) Transfer Ass'y

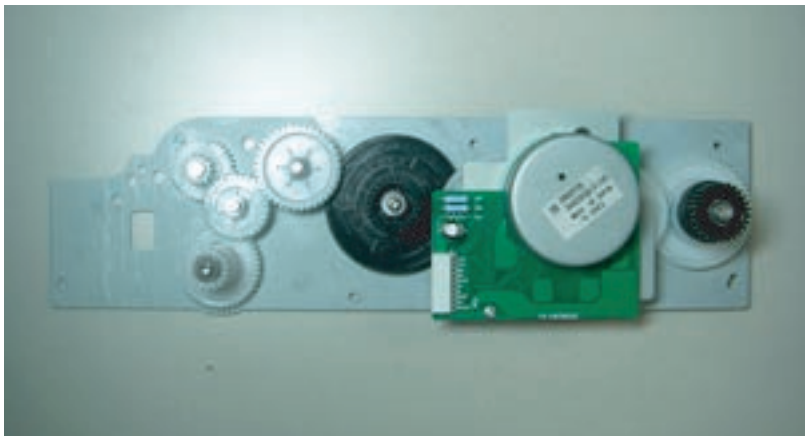
· Life Span : Print over 50,000 Sheets(in 15~30℃)



2.2.1.2(c) Driver Ass'y

· By driving the motor, it supplies power to the feeding unit, the fusing unit, and the distributing unit.

· In SCX-4500 Series, Latch Gear is used for an easy Jam Removal at Gear Drv Fuser



2.2.1.2(d) Fuser Ass'y

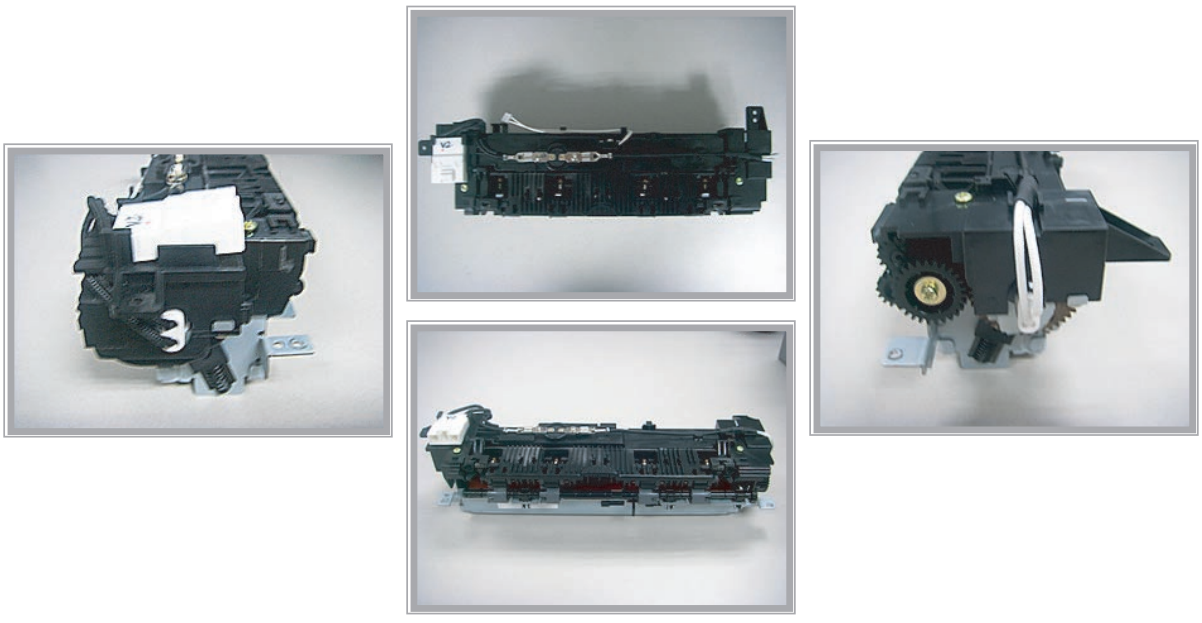
· Halogen Lamp - Control the Fusing Temperature by Heating

· Thermostat - Temperature Intercepting Device, Open 170°c (Receptacle type)

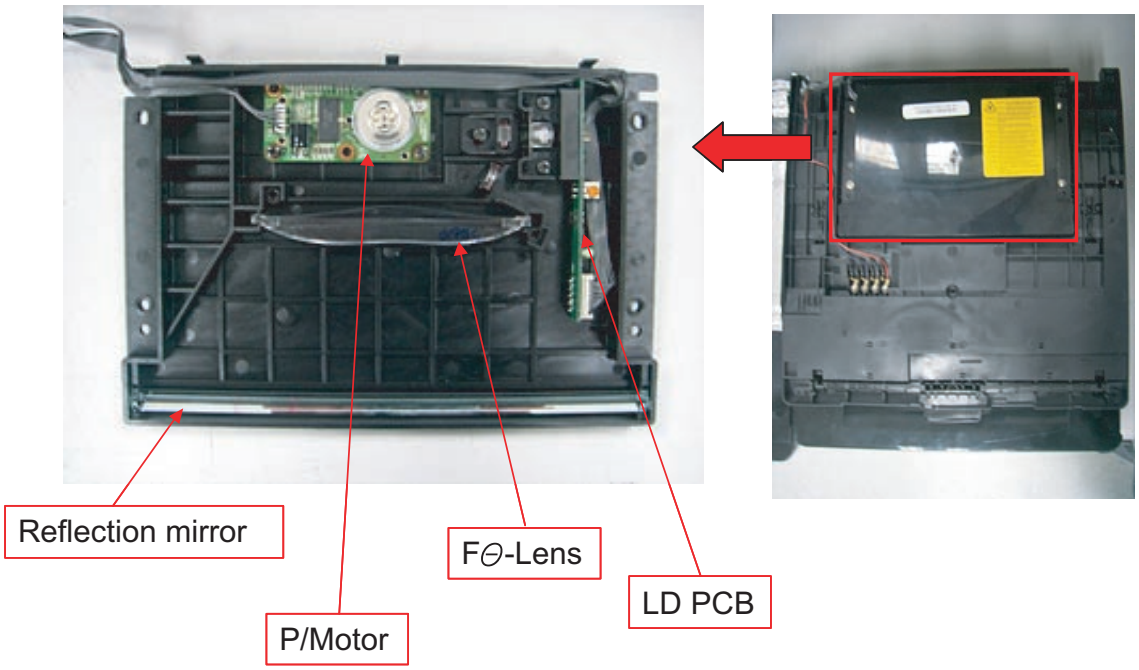
· Heat Roller - Teflon Coating

· Pressure Roller - Silicon, the Same as one of Oriole (ML-2571N)

· Thermistor - Temperature Detecting Sensor



2.2.1.2(e) LSU(Laser Scanner Unit)



2.2.1.2(f) Toner Cartridge

- Developing Method : Non-magnetic 1 element contacting method
- Toner : Non-magnetic 1 element shatter type toner
- Toner remaining amount detecting sensor : None
- The life span of toner : 2,000 Sheets(ISO 19752 Standard)
- OPC Cleaning : Collect the toner by using cleanning blade
- Management of disused toner : Collect the toner by using electric static (Non-Cleaner type)
- OPC Drum protecting Shutter : None

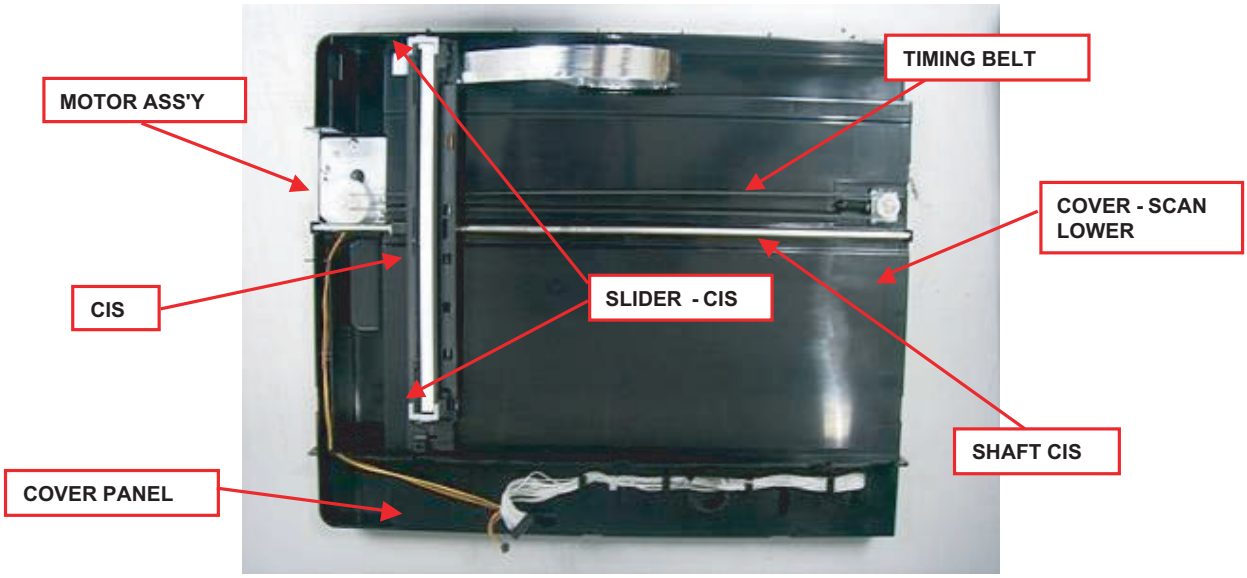
2.2.1.2(g) Scanner Part Layout

· Scan Method : 600dpi Color CIS Module

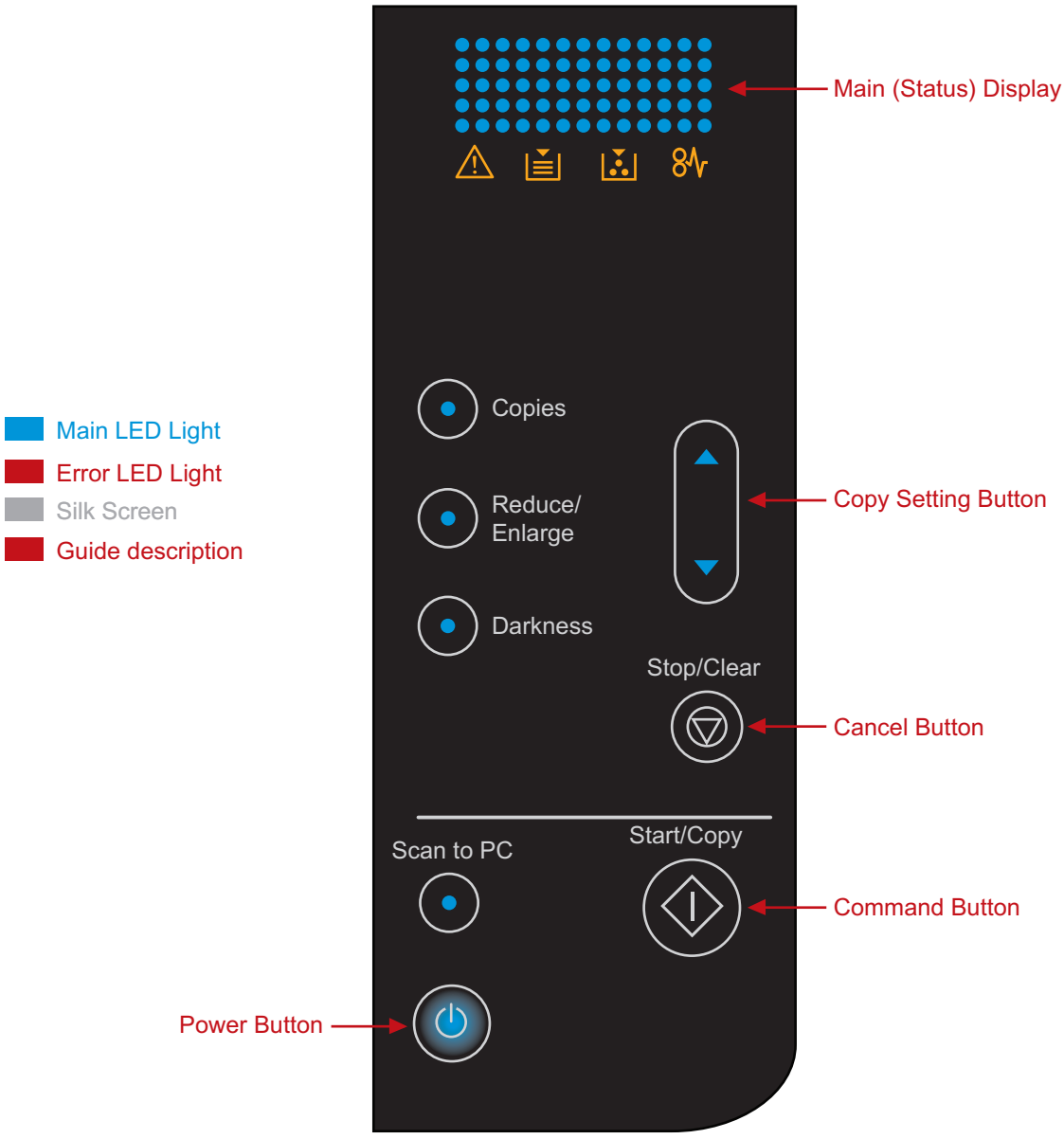
· Maximum Scan Width : 216 mm (width of Letter Size)

· Effective Scan Length : 297 mm

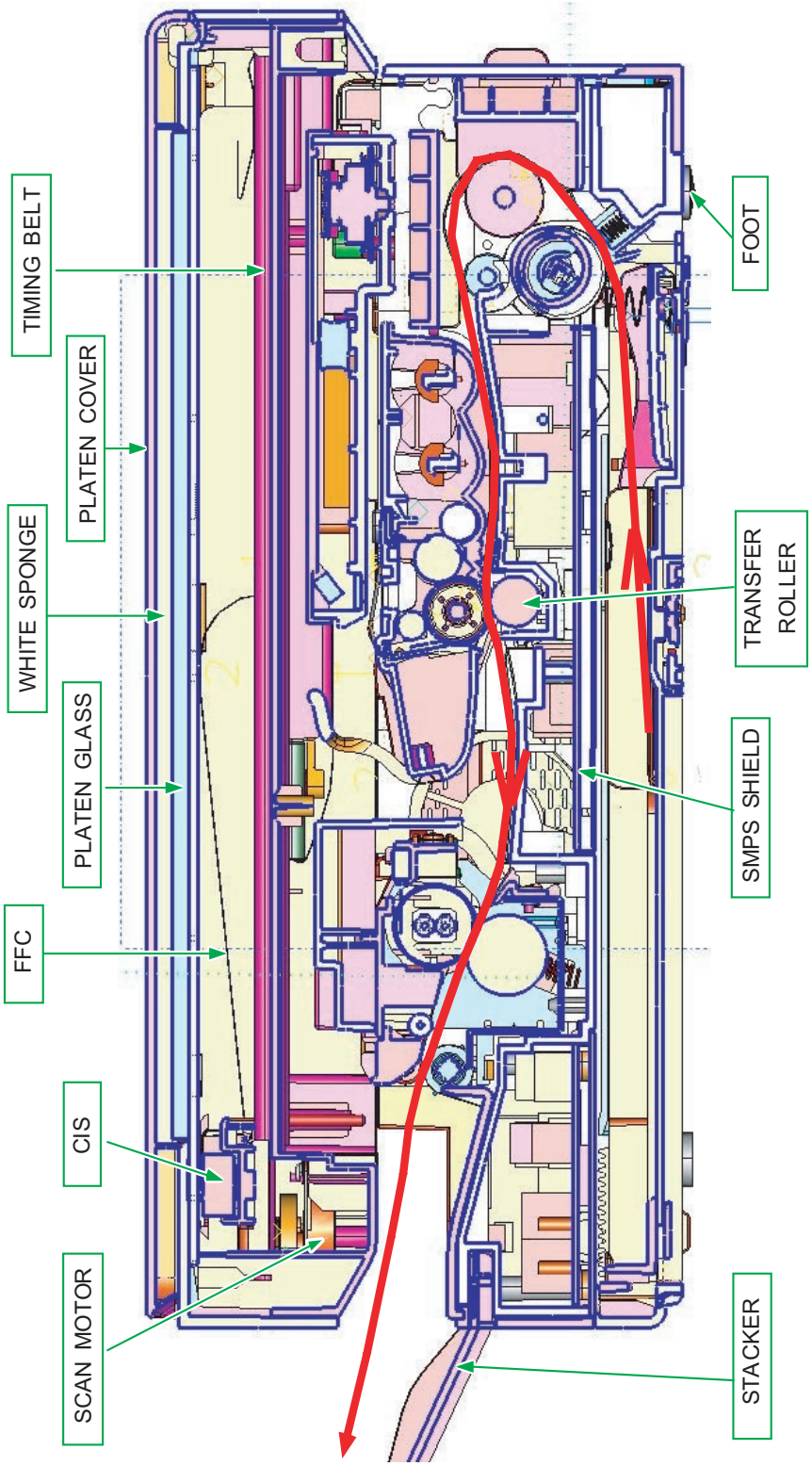
· Scan Line Time : 1.5 msec(mono)



· Panel


Main LED Light
Error LED Light
Silk Screen
Guide description
Main (Status) Display
Copies
Reduce/
Enlarge
Darkness
Copy Setting Button
Stop/Clear
Cancel Button
Scan to PC
Start/Copy
Command Button
Power Button

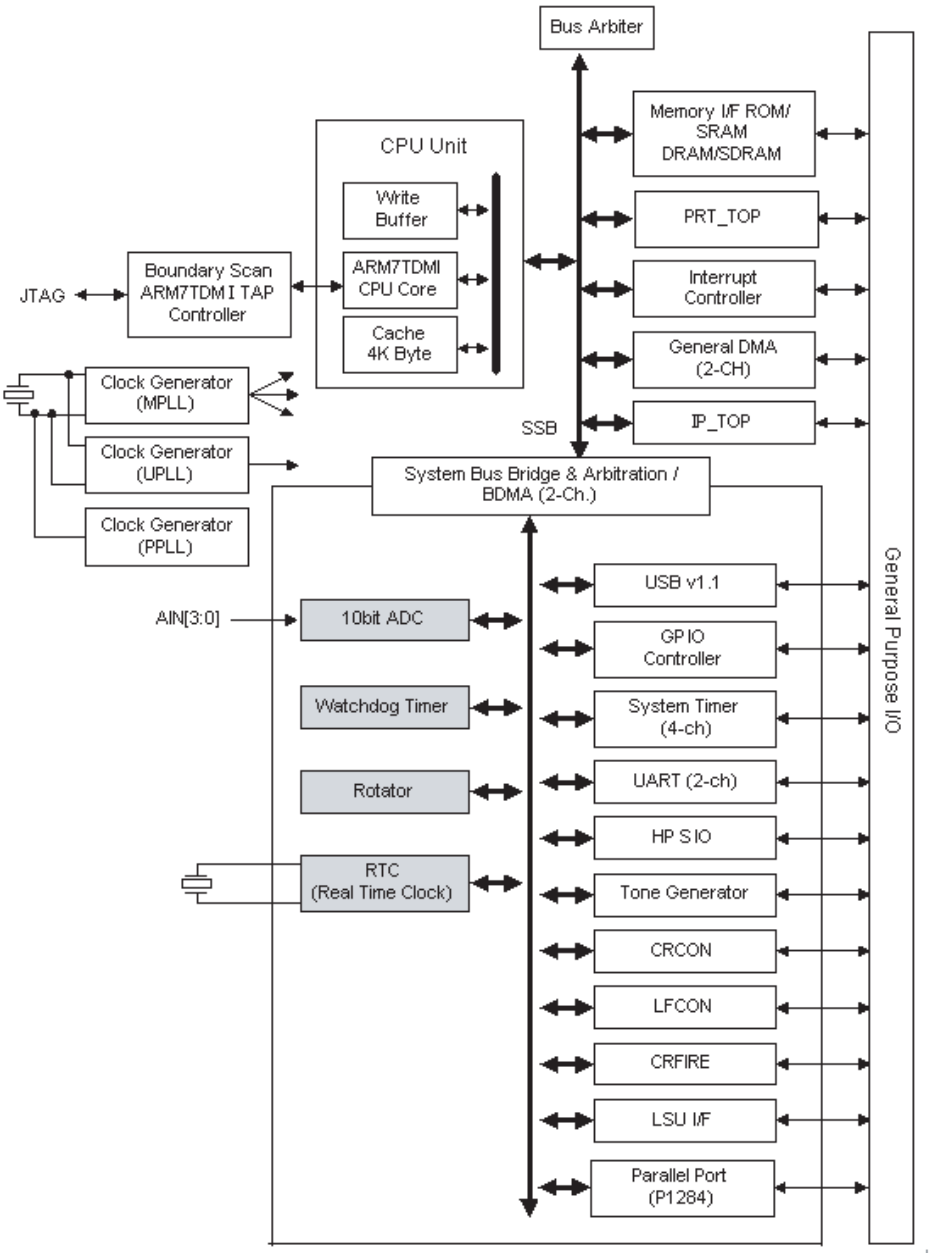
2.2.2 System Layout



2.2.3 System Description

SCX-4500 is made up of Main Controller and Operation Panel, Scan/Copy Part, SMPS/HVPS part and Engine Part. Main Controller uses Chorus2 for its ASIC, which is on chip micro controller and is composed of 1Mbyte Flash memory and 8Mbyte SDRAM to control 16Bit Bus. Chorus2 is operated by 66MHz Bus Clock thru internal PLL of 12MHz system Clock.

2.2.3.1 System Structure



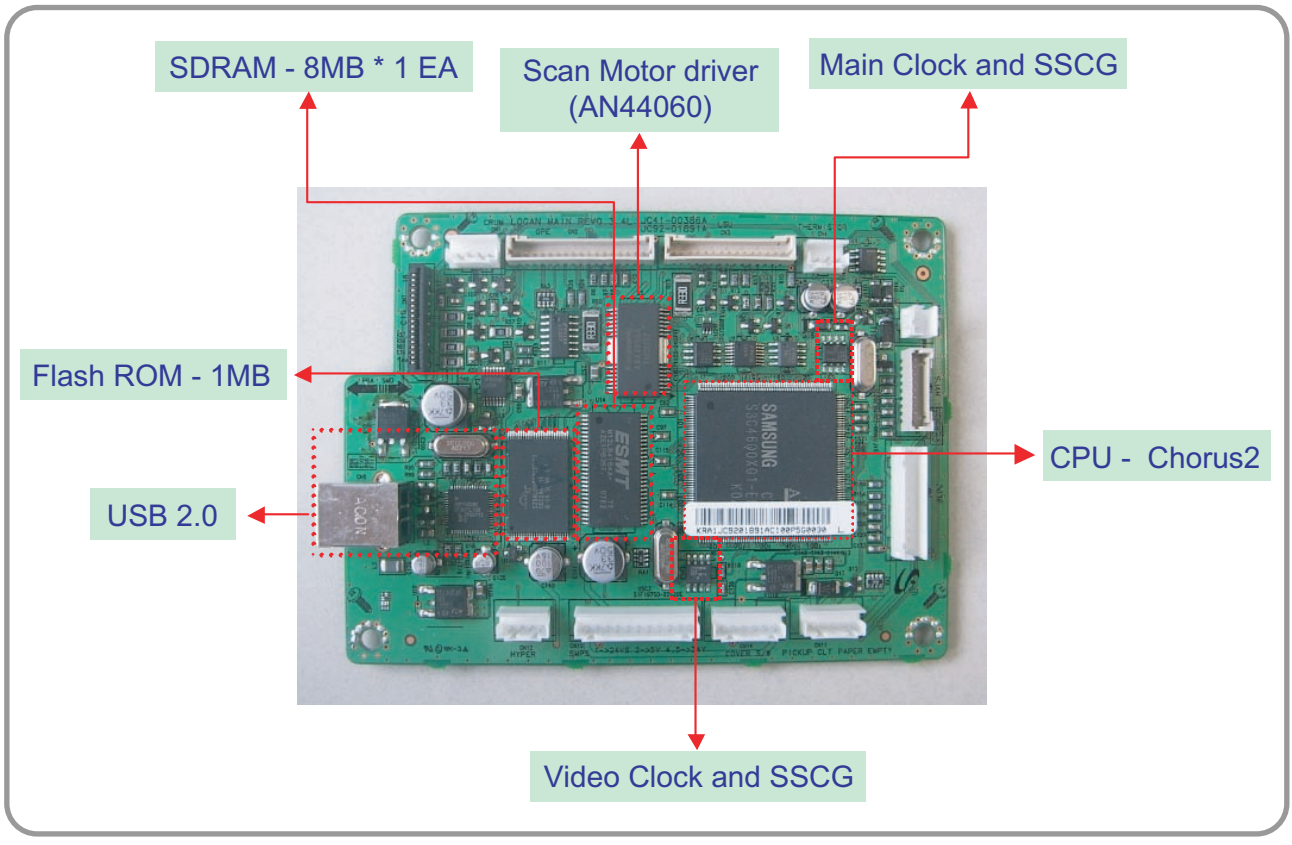
2.2.3.2 Main Controller

SCX-4500 is consisted of ASIC(CPU), scan part and print part and Bus Control. I/O Handling, scan part, each driver, and PC interface are working controlled by the CPU.
Main Controller has full capability on Main Board. There are 2 major functions in the CPU which are Controller ASIC and Image Processor.

1) CPU : 16Bit RISC Processor, Chrous II for printers and MFPs is used and controls the system operating each operation block by system program in Flash Memory.

2) Flash Memory : saves system program and each parameter used in system, and downloads the system program by PC Interface.
- Memory : 1 Mbyte
- Access Time : 100 nsec

3) SDRAM : used by Print Buffer while printing, Scan Buffer while scanning, and System Working Memory.
- Memory : 8 Mbyte
- Operating Frequency : 66 MHz



2.2.3.3 SCAN Part

SCX-4500 has color scanning functionality and Chorus II and Scan Part is consisted of Signal Controller and Scan Motor Controller.

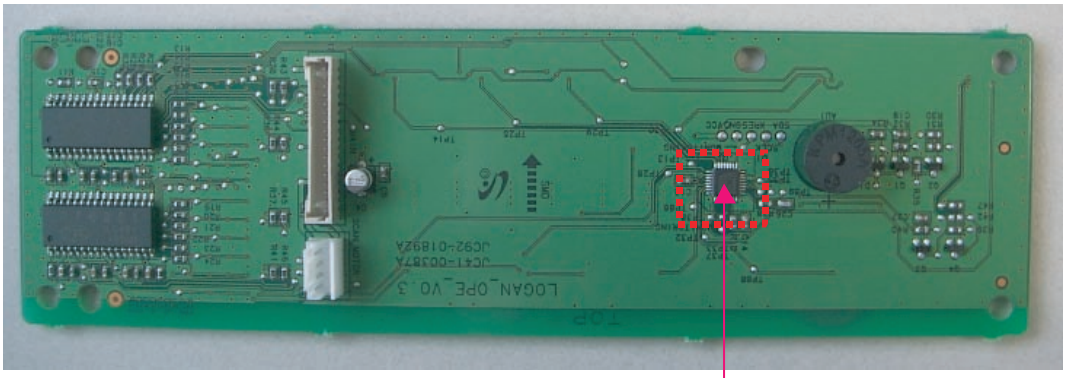
- Resolution : 600x2400dpi(MAX)
- Effective Scanning Length : 216mm
- Effective picture elements : 5104(600DPI), 2552(300DPI)
- Sensor elements : 5136 dots

2.2.3.4 Motor Contorllor

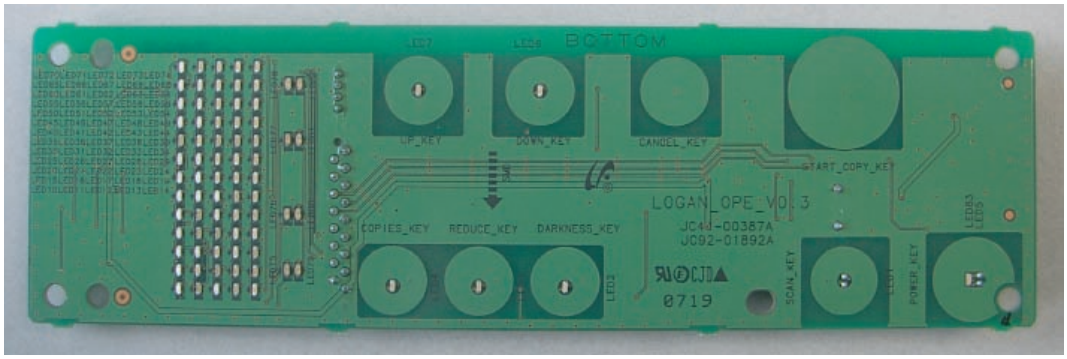
Bi-polar Motor is controlled by AN44060 Motor Drive IC and is controlled by the output signal of Scan Motor Part.

2.2.3.5 Panel Part

It adapts CY8C21434 Touch IC interfaces through UART and PT6961 LED Driver IC controls 65 LED matrix and 15 status LEDs.



Touch Sensor IC - CY8C21434



2.2.3.6 Engine H/W configuration

1) Main Board

Main Board is consist of Engine and Controller on the one-Board.

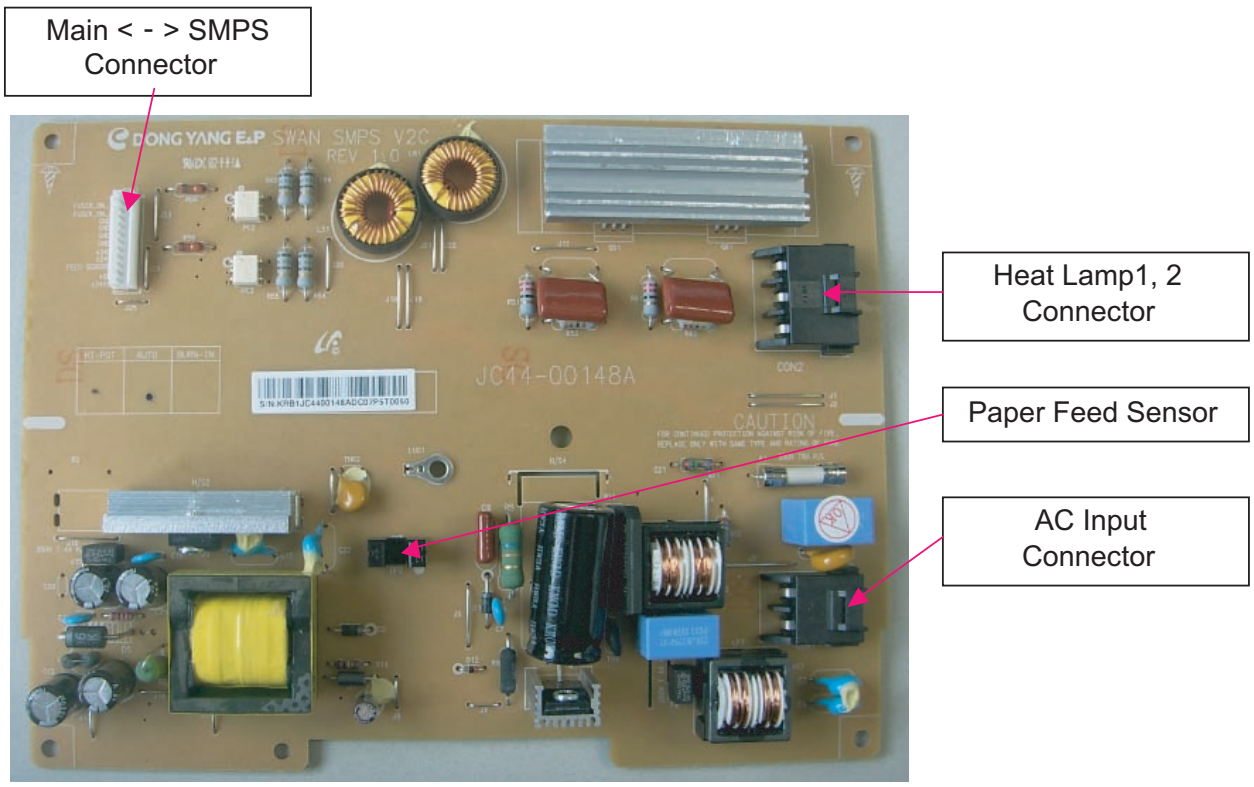
Main board interfaces PC and communicates with Image Scan and LCD of OPE Panel. Video data comes out from LSU. it senses and controls motor driving, Fuser high voltage, and sensors.

2) SMPS Board

It is consisted of the SMPS part, which supplies the DC power for driving the system, and the AC heater Controller, which supplies the power to fuser.

SMPS has two output channels. Which are 5V and +24V

- AC Input
  - ① Input Rated Voltage : AC 110V ~ 127V(V1) , AC 220V ~ 240V(V2)
  - ② Input Voltage fluctuating range : AC 99V ~ 135V / AC 198V ~ 255V
  - ③ Rated Frequency : 50/60 Hz
  - ④ Frequency Fluctuating range : 47~53Hz(50Hz) , 57~63Hz (60Hz)
  - ⑤ Input Current : Under 4.0Arms / 2.5Arms
    (But, the status when lamp is off or rated voltage is inputted/outputted)



- Rated Output Power

NO	Items	CH1	CH2	Remarks
1	CHANNEL	+5V	+24.0V	
2	CONNECTOR PIN	CON 2 5V PIN: 2 GND PIN: 3, 4	CON 2 24V PIN: 7, 8 GND PIN: 5, 6	
3	Rated Output	+5V ±5% (4.75 ~5.25V)	+24V ±10% (21.6 ~26.4V)	
4	Max. Output current	1.0 A	2.0 A	
5	Peak Loading current	1.2 A	2.5 A	1ms
6	RIPPLE NOISE Voltage	150mVp-p or less	500mVp-p or less	
7	Maximum output	5W	48W	
8	Peak output	6.0W	60W	1ms
9	Protection for loading shortage and overflowing current	Fuse Protection	Shutdown when output current flows 2.8A~6.0A	

3) HVPS Board

The HVPS part takes the 24V and outputs the high voltage for THV/MHV/BIAS, and the outputted high voltage is supplied to the toner, OPC cartridge, and transfer roller.

① Transfer High Voltage (THV+)

- Input Voltage : 24 V DC ± 10%
- Out Voltage : Max +5.0KV ± 3
- Output Voltage Variation : ± 3 % below(Variation 21.6V ~26.4V)
- Out Voltage Rising Time : 100 ms Max
- Out Voltage Falling Time : 100 ms Max
- Transfer Variation Voltage on Environment Variation : +400V ~ 5 KV
- Control Method on environment : THV-PWM ACTIVE, transfer Active signal, of environment sensing voltage is input and get feed back current, and recalculate it to resistance.
- Control method on transfer output voltage : It is controlled by changing its duty of THVPWM Signal.

② Charge Voltage (MHV)

- Input Voltage : 24 V DC ± 10%
- Out Voltage : -1.2KV ~ -1.8KV DC ± 3%
- Out Voltage Rising Time : 50 ms Max
- Out Voltage Falling Time : 50 ms Max

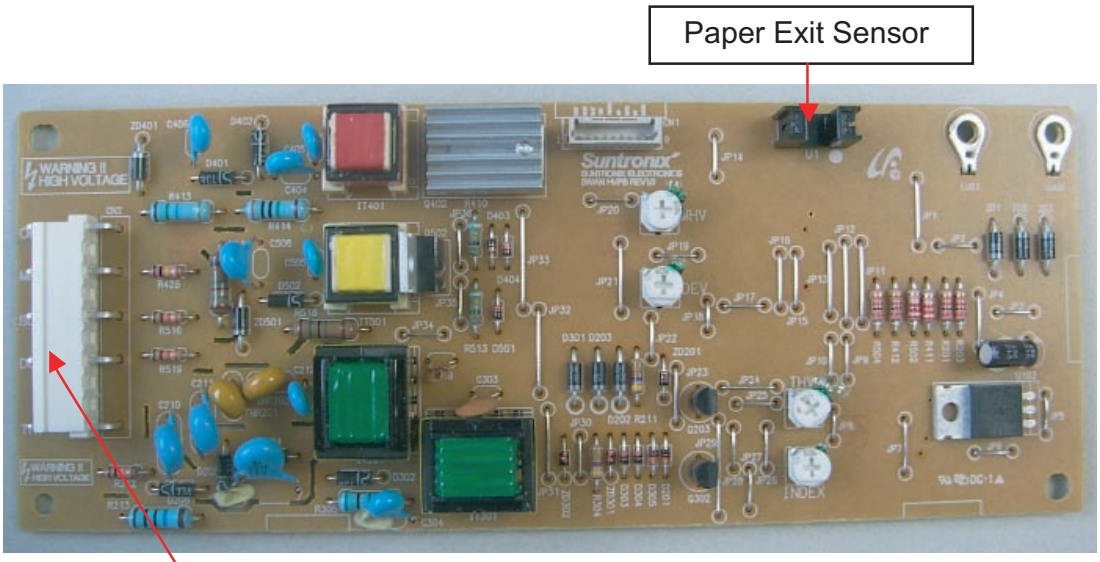
- Out Voltage Range : 30 MΩ ~ 1000 MΩ
- Output Control Signal(MHV-PWM) : CPU is HV output when PWM is Low

③ Developing Voltage (DEV)

- Input Voltage : 24 V DC ± 10%
- Output Voltage : -220V ~ -450V DC ± 3%
- Output Voltage Fluctuation range : PWM Control
- Input contrast of the output stability degree : ± 3 % or less
- Loading contrast : ± 3 % or less
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10MΩ ~ 1000 MΩ
- Output Control Signal (BIAS-PWM) : the CPU output is HV output when PWM is low.

④ Supply

- Output Voltage : -520 V ~ -750V DC ± 3% (ZENER using, DEV)
- Input contrast of the output stability degree : under ± 3 %
- Loading contrast : ± 3 % or less
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10 MΩ ~ 1000 MΩ
- Output Control Signal (BIAS-PWM) : the CPU is HV output when PWM is low.



OPC	- 100 V
MHV	- 1300 V
SUP	- 730 V
DEV	- 430 V
THV	+1,300 V

Main < - > HVPS Connector

▶ HVPS board supply high voltage for developing Process.
▶ High Voltage controlled by PWM signal from CPU.
▶ Paper Exit Sensor exists on HVPS.

4) FUSER AC POWER CONTROL

Fuser(HEAT LAMP) gets heat from AC power. The 'ON/OFF control' is operated when the gate of the Triac is turned on/off by Phototriac (insulting part).
In other words, the AC Controller is passive circuit, so it turns the heater on/off with taking signal from engine Controller.
When the 'HEATER ON' signal is turned on at engine, the LED of Photo Triac takes the voltage and flashes.
From the flashing light, the Triac part (light receiving part) takes the voltage, and the voltage is supplied to the gate of Triac and flows into the Triac. As a result, the AC current flows in the heat lamp, and heat is occurred. On the other hand, when the signal is off, the photo triac is off, the voltage is cut off at the gate of Triac, the Triac becomes off, and then the heat lamp is turned off.

- Triac feature :16A, 600V SWITCHING
- Phototriac Coupler

2.2.4 S/W Descriptions

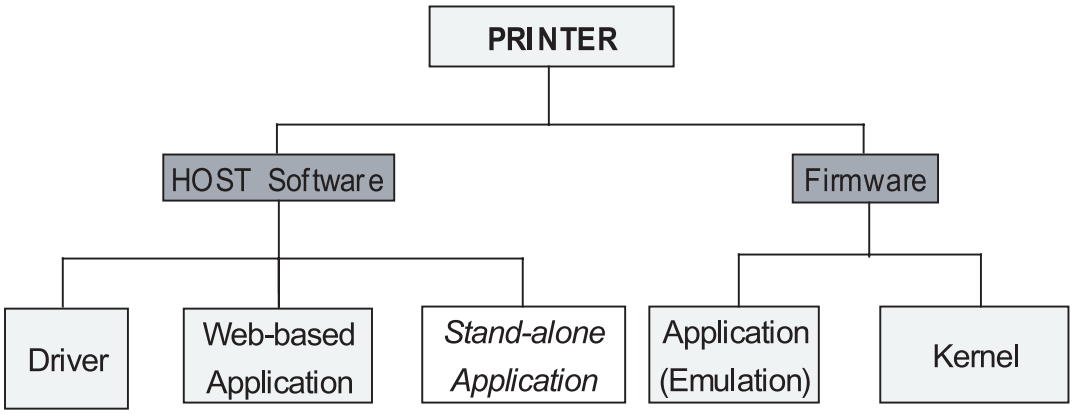
2.2.4.1 Overview

The software of Logan system is constructed with

1) Host Software part that the application software operated in Window and Web Environment, and

2) Firmware parts that is a Embedded software controls printing job.

2.2.4.2 Architecture



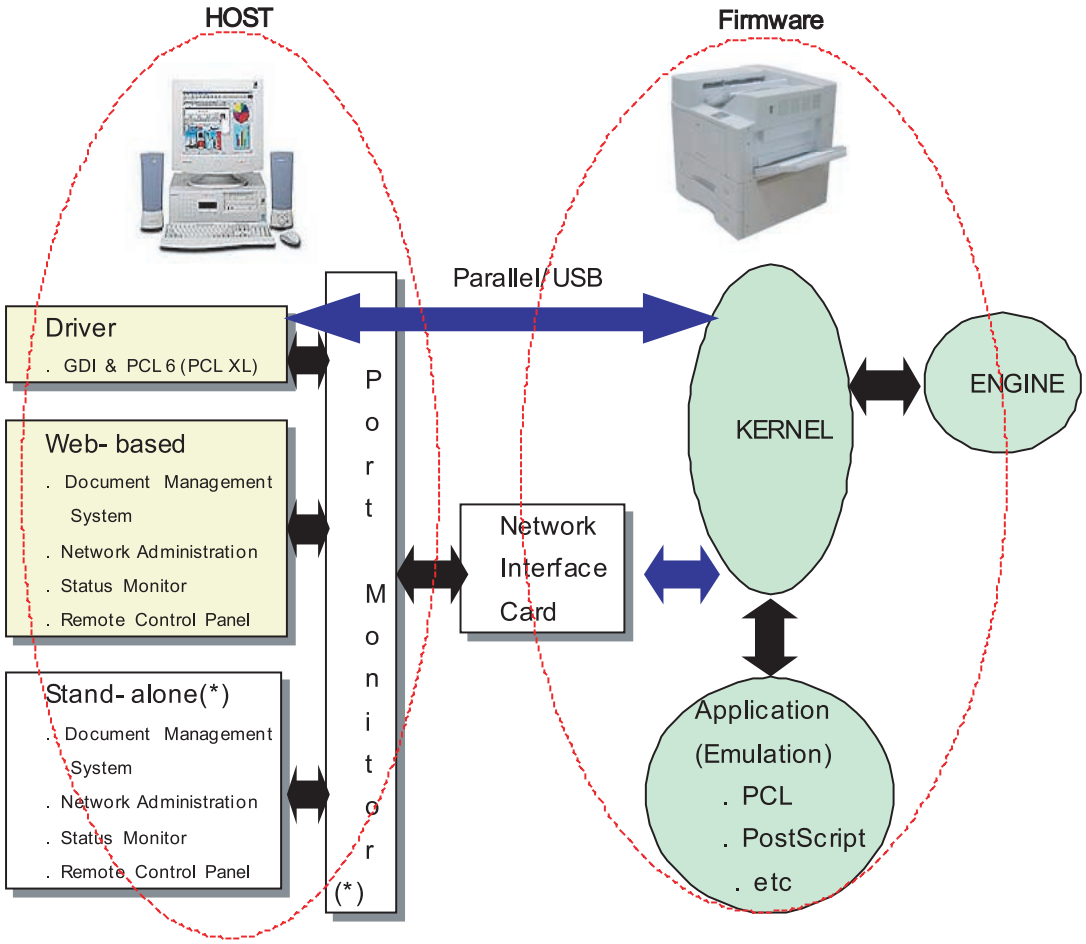
Host Software is made up of

1. Graphic User Interface that offers the various editing functions to user in Host,
2. Driver that translates the received document to a Printing Command language which printer can understand and transfers data to spooler,
3. Stand-alone Application that offers the various printing application, DMS(Document Management System), RCP(Remote Control Panel), Printer Status Monitor, Network Management in Window system,
4. Web-based-Application that offers the same functions as Stand-alone Application and RDC(Remote Diagnosis Control) in Web environment.

Firmware is made up of

1. Application (Emulation) that is a interpreter translate data received from Host to a printing language (PCL, PS, GDI, etc.) to be able to make the user to take same output as originally one what composed in Host.
2. Kernel that control and management the whole procedure include of Control flow and Printing Job before transfer to Engine system.

2.2.4.3 Data and Control Flow



The above Block Diagram is explained that:

Host Side is made up of

1. Driver that is Windows application software translate printed data to one of printer language and create spooler file,
2. Web-based Application that offer a various printer additional functions, management of printing job, printer administration, Status monitor to monitoring the printer status by real time in Web, independent environment on OS.
3. Stand-alone Application that is a similar Window software as same as above 2,
4. Port Monitor that manages the network communication between spooler and Network Interface Card, or various additional application and Network Interface Card,(this is, at first, make communication logical port, manage the data, transfer them from spooler to network port, and offer the result of printing).

Firmware Side is made up of

1. Network Interface Card is that relay the communication between Host and kernel using various network protocol,
2. Kernel is that manages the flow control of emulation procedure, receiving data from Host or Network card and printing with engine & rendering job,
3. Emulation is that interprets the various output data from selected emulation,
4. Engine is that prints rendered bit-map data to paper with required size and type by Kernel.

And then, for Job Spooling function for Multi-User, Multi-Printing that is occurred in Network printing and various additional printing functions, this Kernel use max. 10 Queuing systems in a memory.

In Printing, the two procedures are

(1) Case of using Parallel or USB Port

① After user start to print the wanted document to PCL string or compressed GDI bit-map data, Driver translate the all graphic data of it and send data to host spooler. And then the spooler sends the data stream to the printer via parallel port or USB port.

② Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).

③ Engine print the received data to required paper with the sequential developing process.

(2) Case of using Network Interface Card

① After user start to print the wanted document to PCL string or compressed GDI bit-map data, Driver translate the all graphic data of it and send data to host spooler.

② If so, Port monitor managing network port receives data from spooler and sends a data stream to the Network Interface Card.

③ Network interface card receives it and send to Kernel part,

④ Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).

⑤ Engine print the received data to required paper with the sequential developing process.

The additional printing function are realized in

(1) Web environment

(2) Window environment.

On addition, Kernel informs a status of printing status and printer status to user made printing job with the Status Monitor.

3. Disassembly and Reassembly

3.1 General Precautions on Disassembly

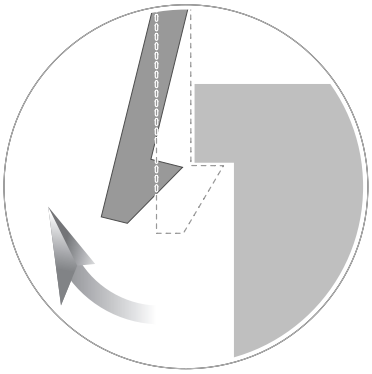
When you disassemble and reassemble components, you must use extreme caution. The close proximity of cables to moving parts makes proper routing a must.
If components are removed, any cables disturbed by the procedure must be restored as close as possible to their original positions. Before removing any component from the machine, note the cable routing that will be affected.

Whenever servicing the machine, you must perform as follows:

1. Check to verify that documents are not stored in memory.
2. Be sure to remove the print cartridge before you disassemble parts.
3. Unplug the power cord.
4. Use a flat and clean surface.
5. Replace only with authorized components.
6. Do not force plastic-material components.
7. Make sure all components are in their proper position.

Releasing Plastic Latches

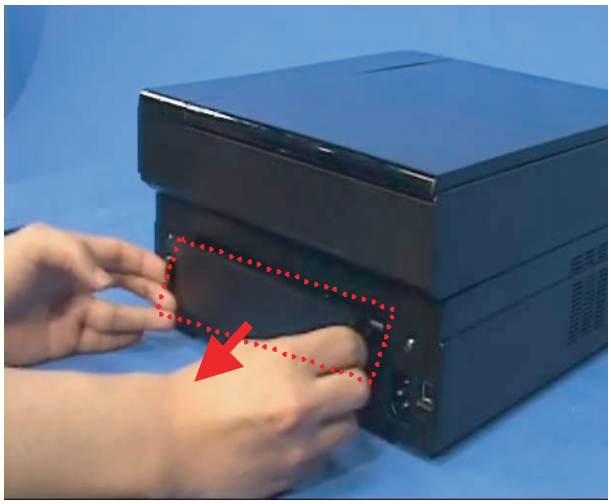
Many of the parts are held in place with plastic latches. The latches break easily; release them carefully.
To remove such parts, press the hook end of the latch away from the part to which it is latched.



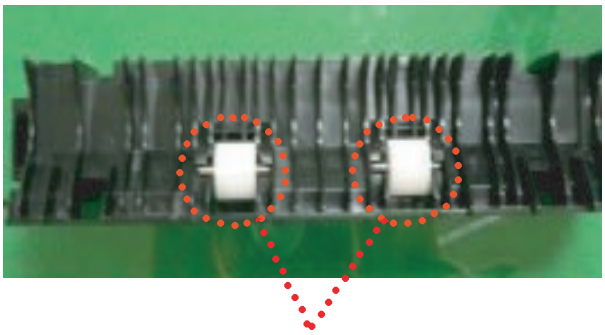
3.2 Cover Unit

The description of disassembly and reassembly in this manual is listed according to the disassembly procedures.

1. Take out the MEA UNIT-FEED LOWER.



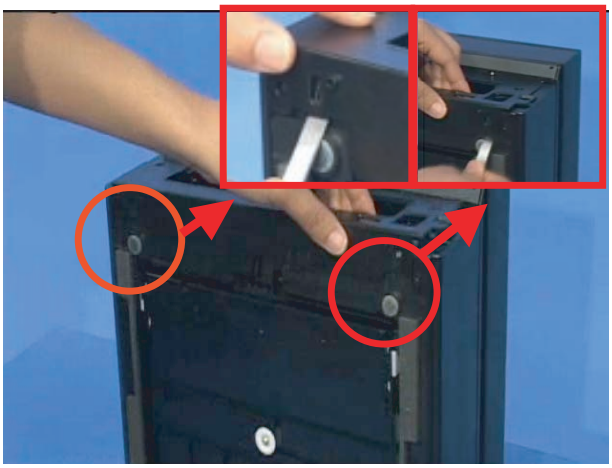
1-1. If necessary, remove the SPRING-ETC of ROLLER-IDLE and take out the GUIDE-FEED-LOWER from the MEA UNIT-FEED LOWER.



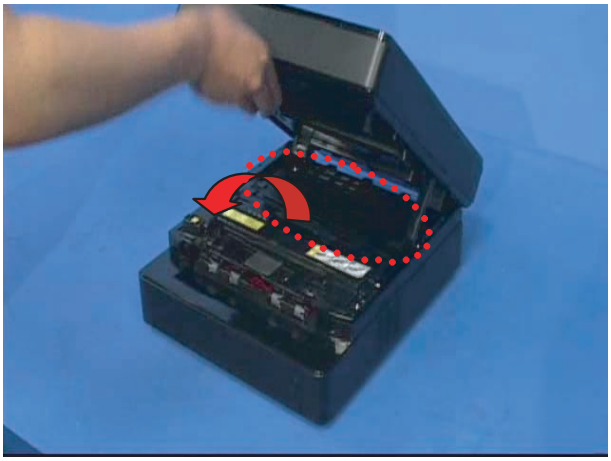
ROLLER - IDLE

2. To remove COVER-REAR, first remove the three screws.

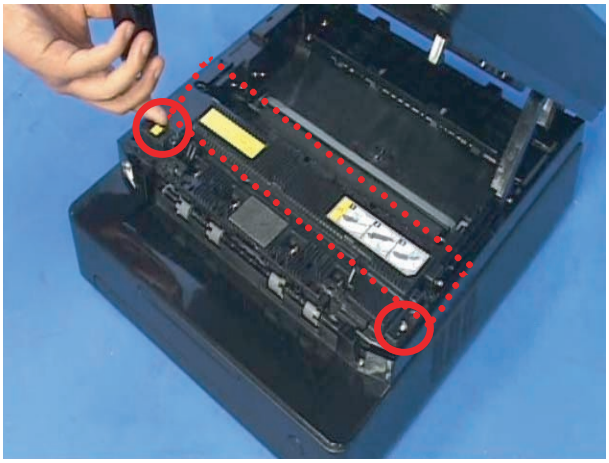
3. Unlatch the latch(2 EA) from the rear bottom of the SET, as shown below.



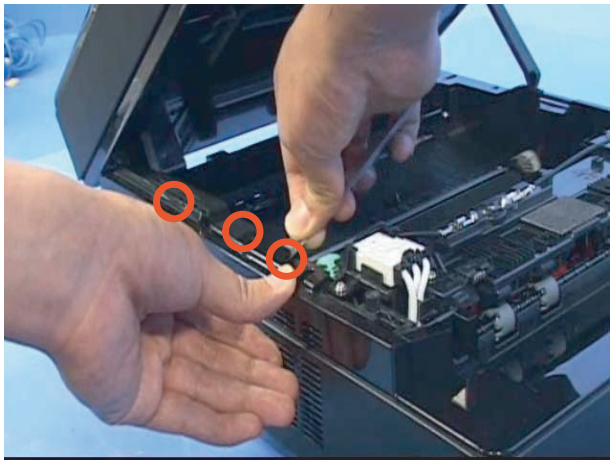
4. Take out the Toner Cartridge.



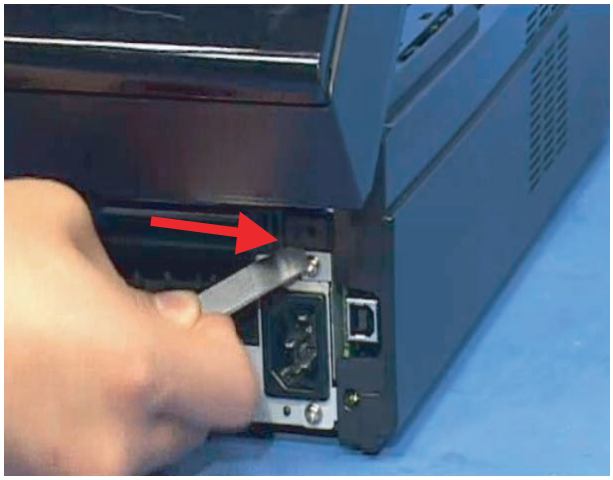
5. To Remove the COVER-FUSER DUMMY, remove the two screws and then release the COVER-FUSER DUMMY.



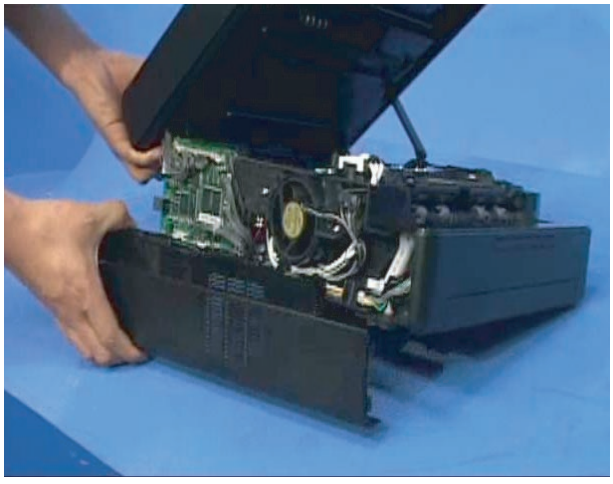
6. To remove the COVER-LEFT, Unlatch the latch(3 EA) of the COVER-LEFT, as shown below.



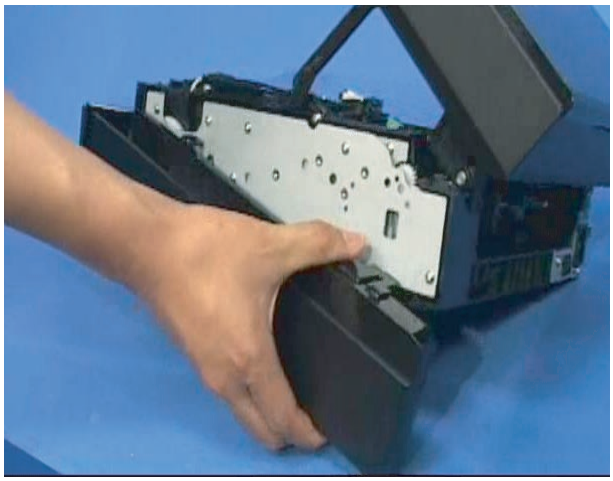
7. Following 6. procedure, unlatch the rear latch of the COVER-LEFT.



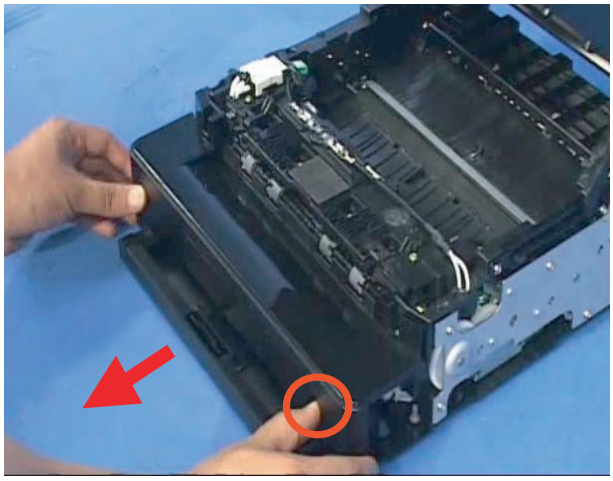
8. Release the COVER-LEFT.



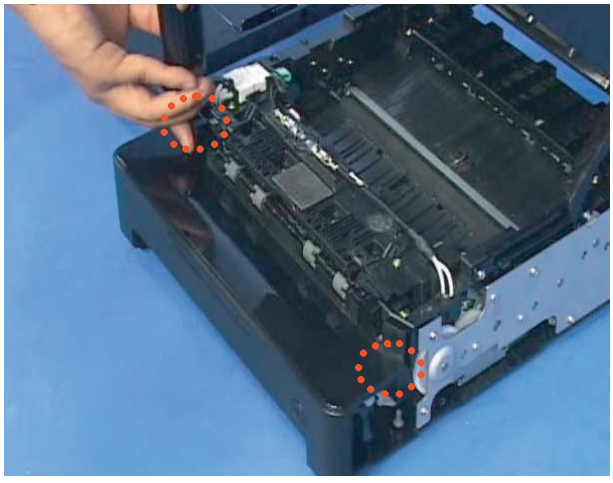
9. In the same way, release the COVER-RIGHT.



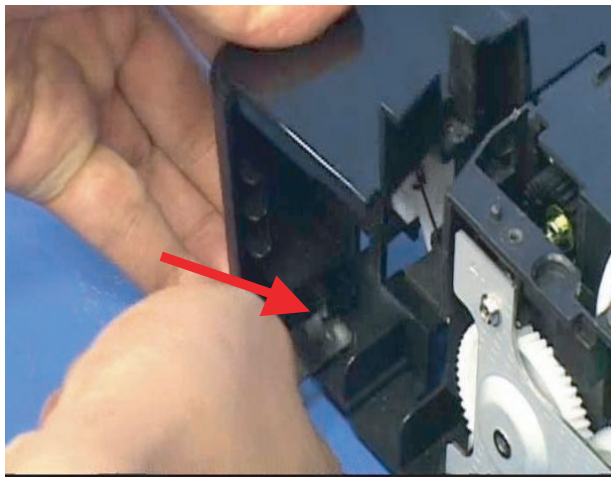
10. Push the button, and take out the Cassette. (Cassette disassembly is referred to Chapter 3.4 in detail.)



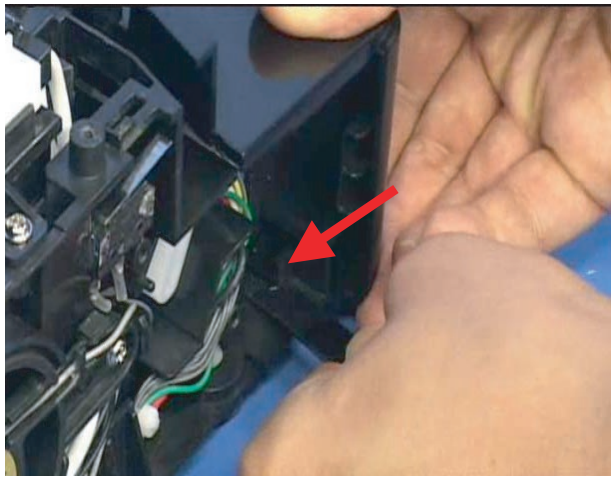
11. To remove the COVER- FRONT, first remove the two screws.



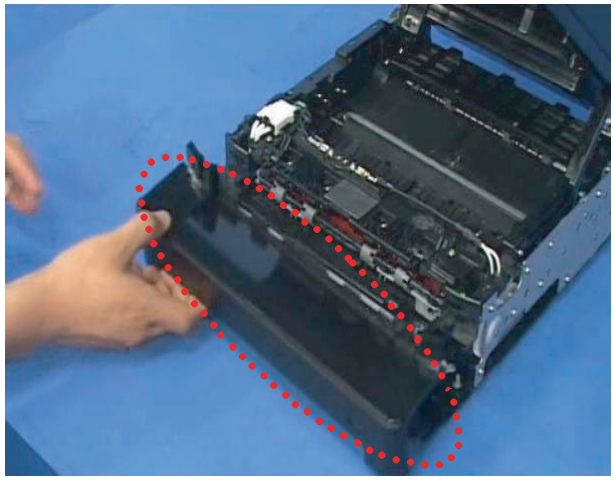
12. Remove the hinge in the right side of the COVER-FRONT.



13. In the same way, remove the hinge in the left side of the COVER-FRONT.

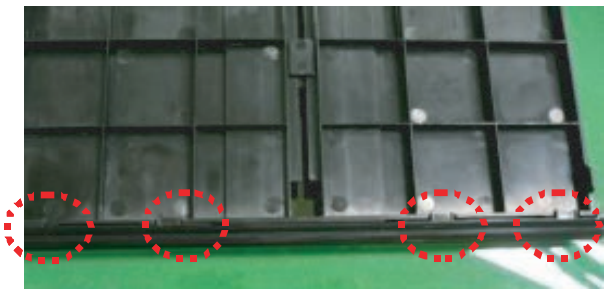


14. Release the COVER-FRONT.

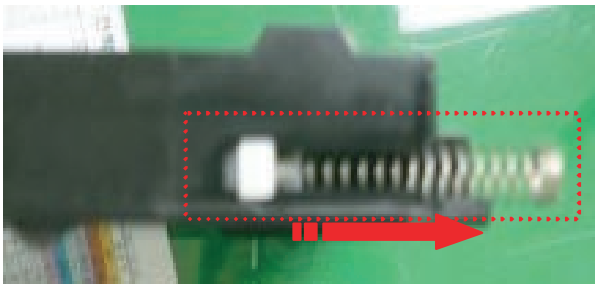


3.3 Cassette

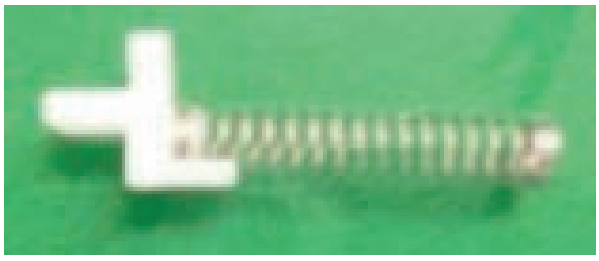
1. Unlatch the 4 latches of the CASSETTE bottom.



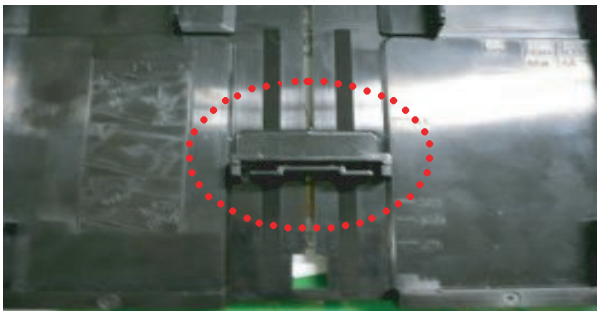
2. Release the GUIDE-CASSETTE LOCK from both side of the CASSETTE.



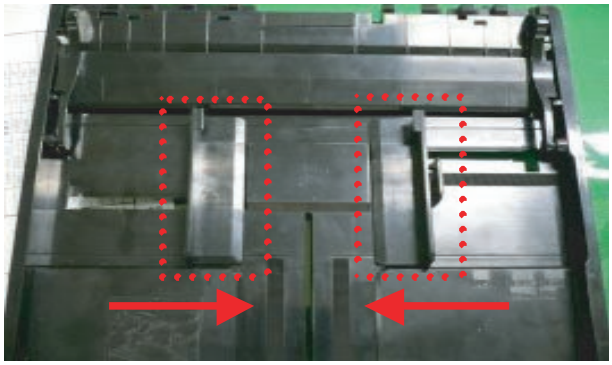
3. Release the RING CS (2EA) from the GUIDE-CASSETTE LOCK



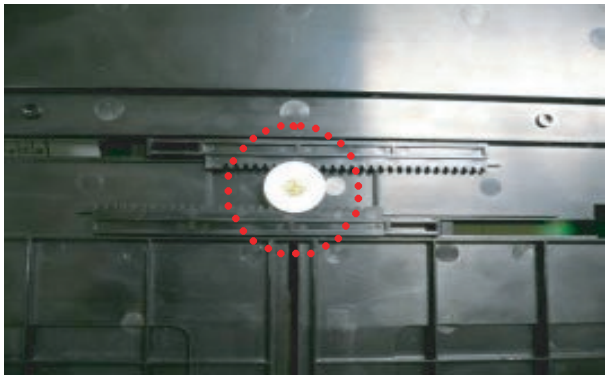
4. Release the GUIDE-REAR.



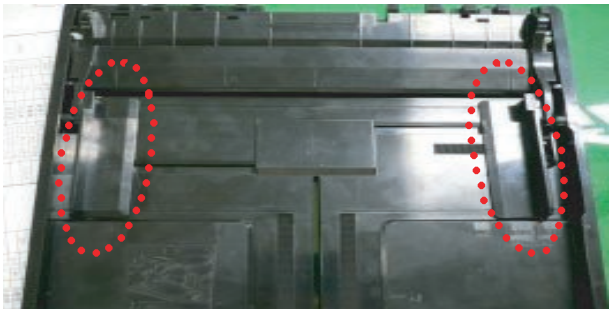
5. Move the GUIDE-SIDE-L,R to the direction of the arrow.



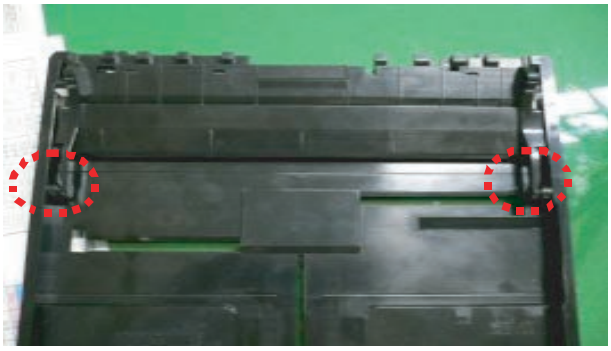
6. Overturn the CASSETTE, and remove the one screw from PINION GEAR.



7. Release the GUIDE-SIDE-L.R.



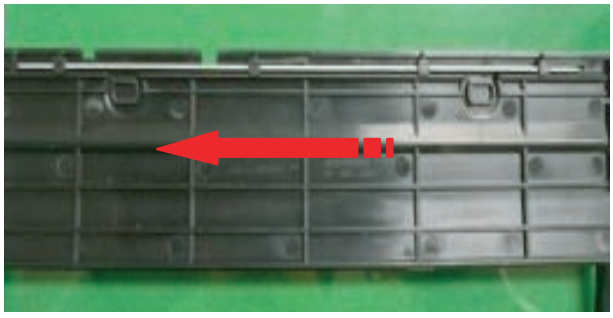
8. Release the PLATE KNOCKUP HINGE.



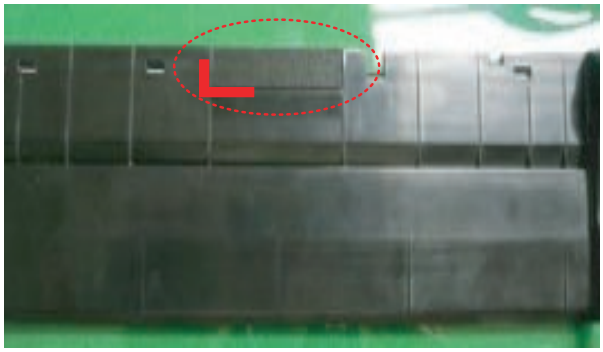
9. Release the FRAME CST HINGE.

10. Spin and Release the SPRING CS from the PLATE-KNOCKUP.

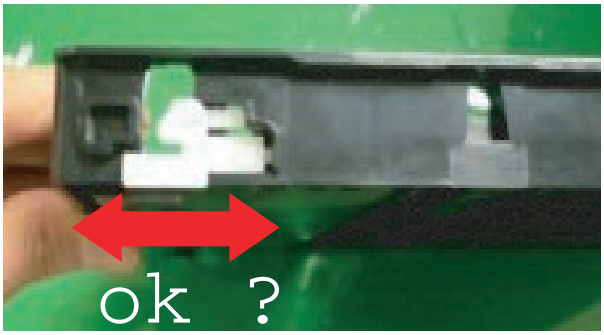
11. Release the SHAFT-P-CORE from the PLATE-KNOCKUP.



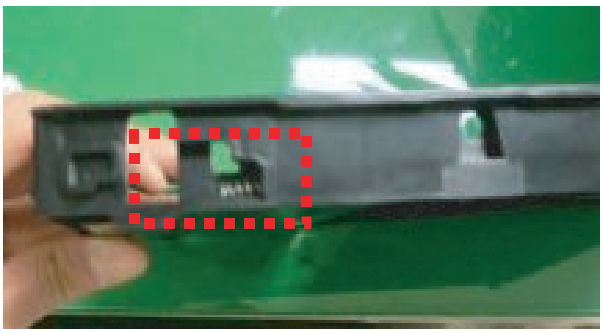
12. Release the RPR-PAD CASSETTE.(※When attaching again, Fit the line.



13. Release the GUIDE-KNOCKUP.(※When reassembling, confirm the operation condition.)

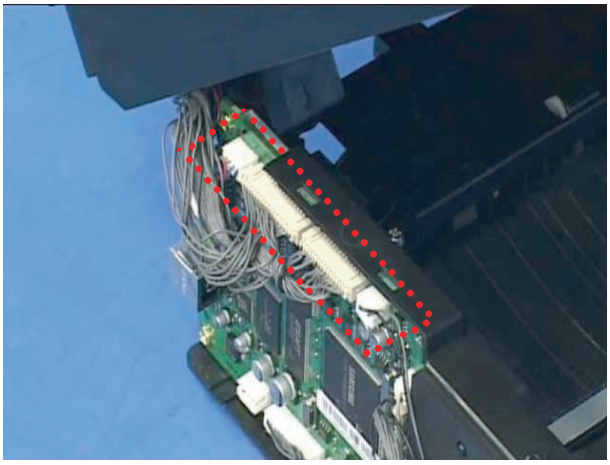


14. Release the SRING ETC-LOCKER PLATE from the both left and right side of the FRAME CST.

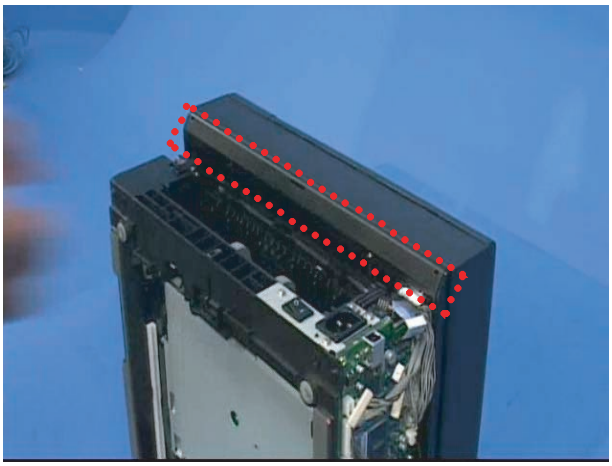


3.4 Scanner Unit

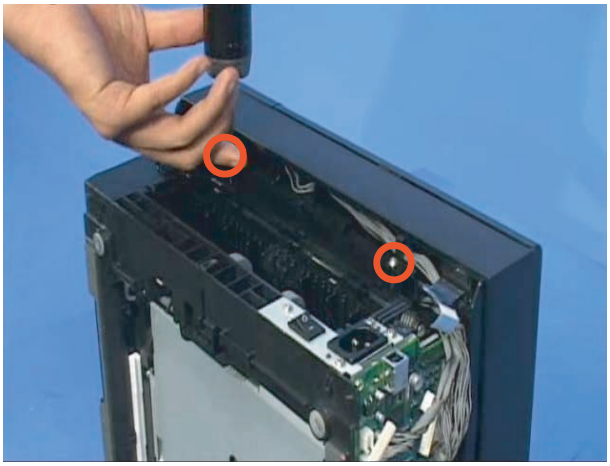
1. Release the Harness from the Main board.



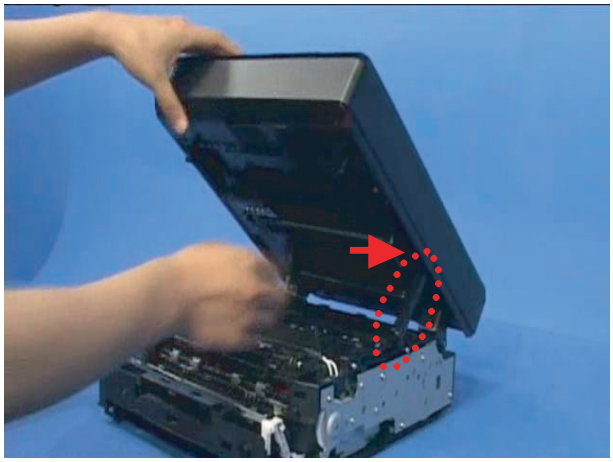
2. Release the COVER SCAN REAR of the Scanner Unit.



3. Remove the two screws.

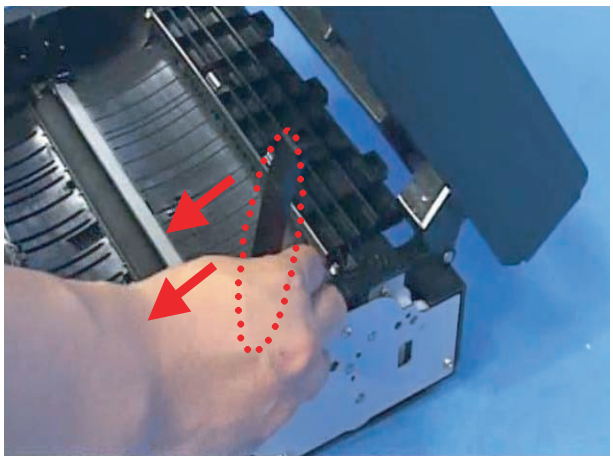


4. Lift up the Scanner Unit with left hand, and release the top of the LINK UPPER with right hand.



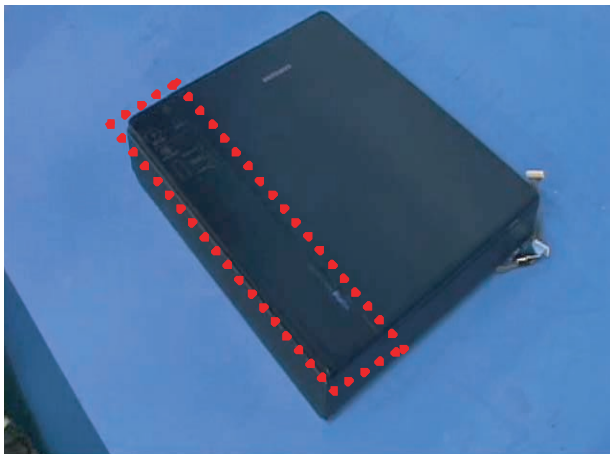
5. Remove the one screw , as shown below.

6. Pull the LINK UPPER to the direction of arrow, and then release it from the SET

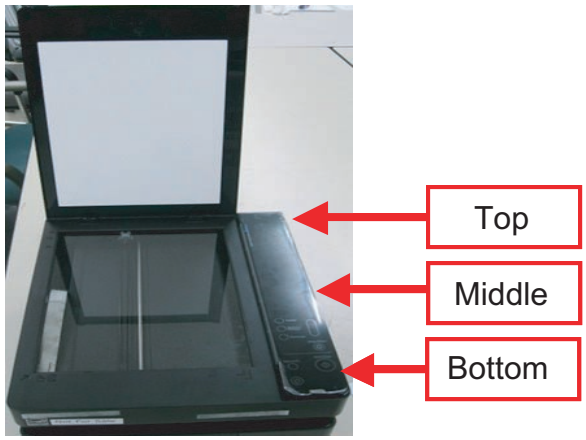


7. Release the Scanner Unit from the SET.

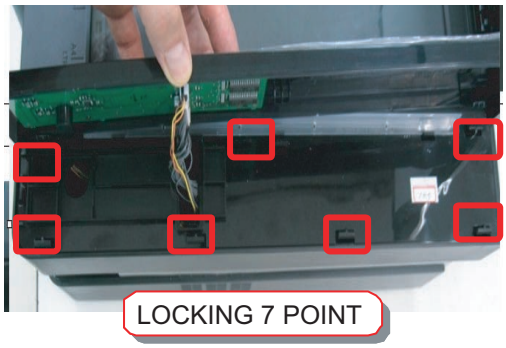
8. To release the COVER SCAN OPE of the ELA UNIT-SCAN OPE, follow below procedure (9~12)



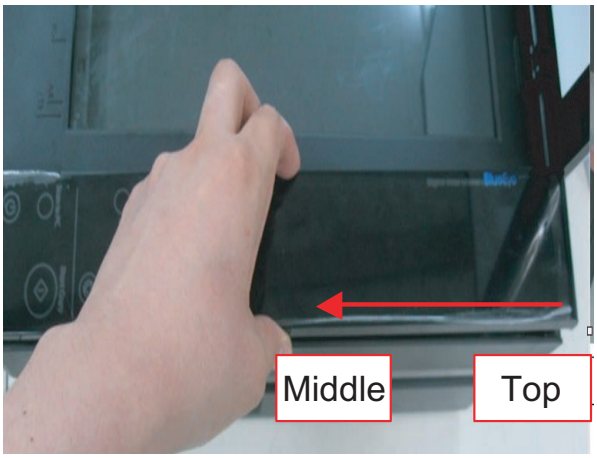
9. Open the Platen Cover.



10. Release the Top locking of the COVER SCAN OPE by using a tool.

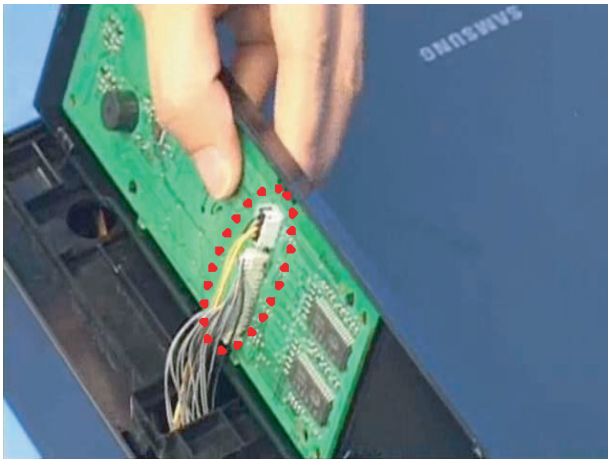


11. Release the Top/Middle locking of the COVER SCAN OPE.

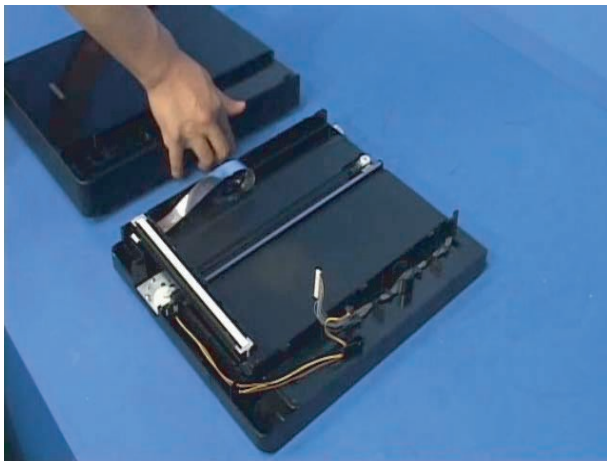


12. Release the Bottom locking of the COVER SCAN OPE.

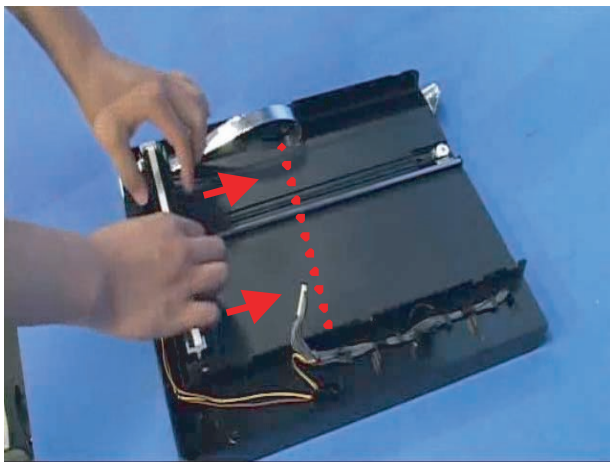
13. To remove the COVER SCAN OPE of the ELA UNIT-SCAN OPE, remove the Harness OPE from the COVER SCAN OPE.



14. Release the ELA UNIT-SCAN OPE from the COVER-SCAN UPPER .

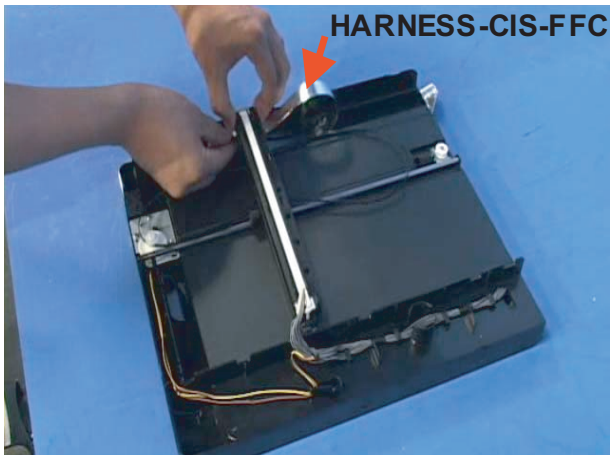


15. Push up the ELA UNIT-CIS to the direction of the arrow.

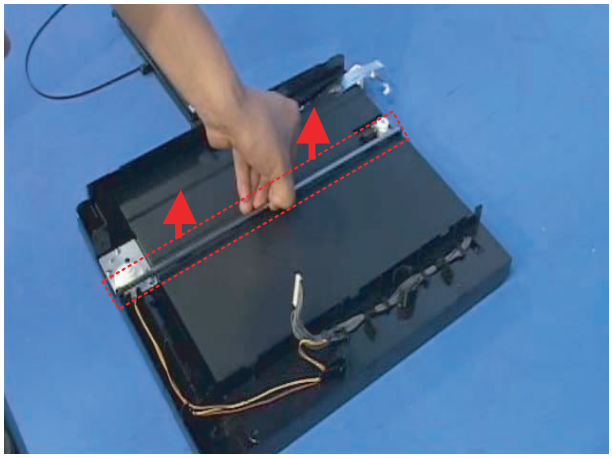


16. Release the TIMMING GEAR, as shown below.

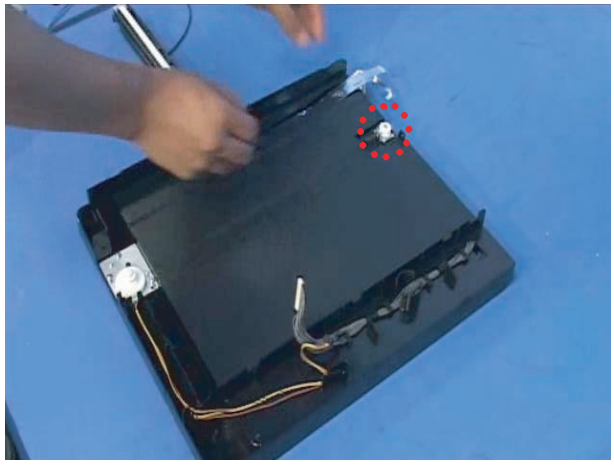
17. Remove the HARNESS-CIS-FFC from the ELA UNIT-CIS.



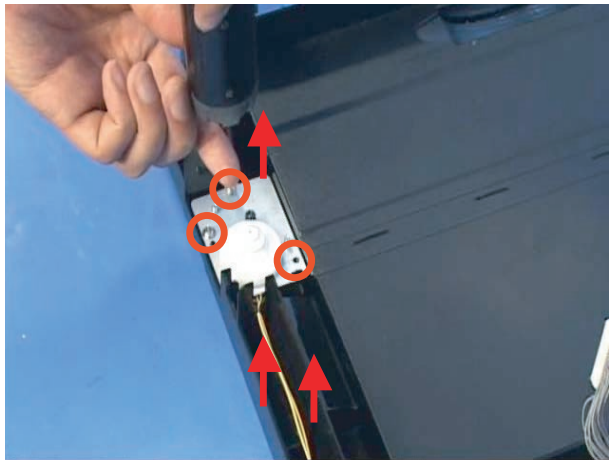
18. Remove the SHAFT CIS.



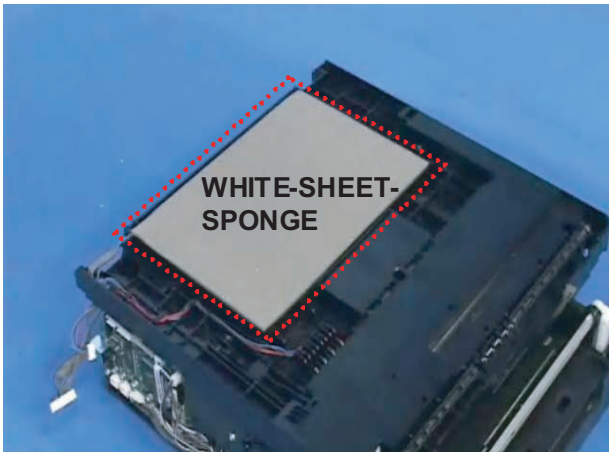
19. Release the PULLY IDLE.



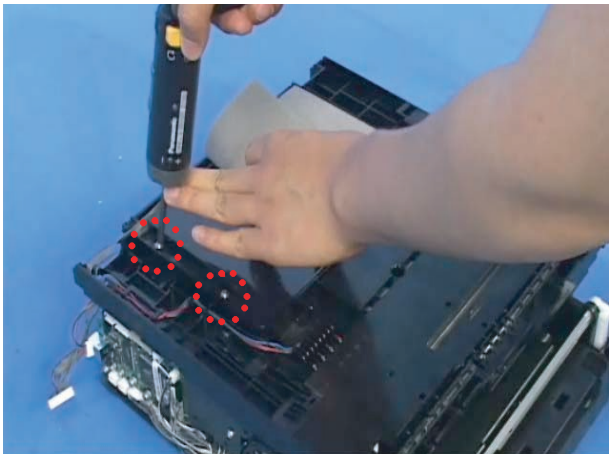
20. To remove the ELA UNIT-SCAN DRIVE, remove the three screws and release it with the connected cable.



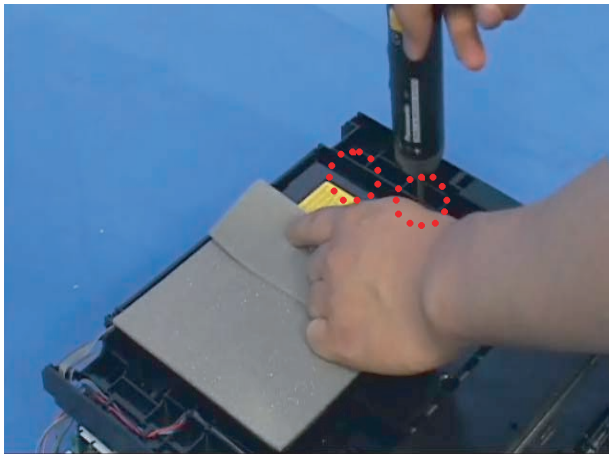
3.5 LSU Unit



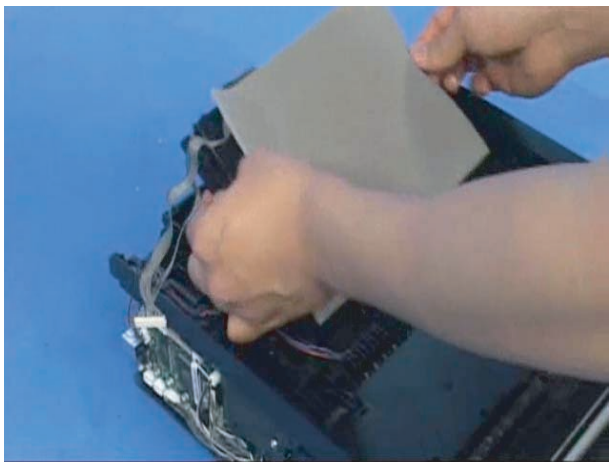
1. To remove the ELA UNIT LSU from the ELA UNIT-FRAME UPPER, remove 4 screws that is under the WHITE-SHEET-SPONGE. First remove 2 screws to the left side.



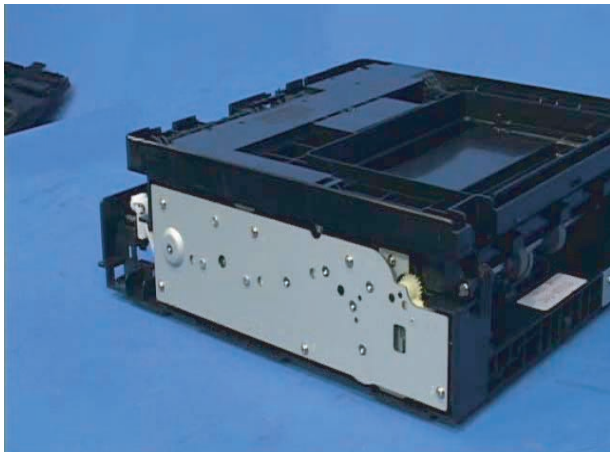
2. Remove the 2 screws to the right side.



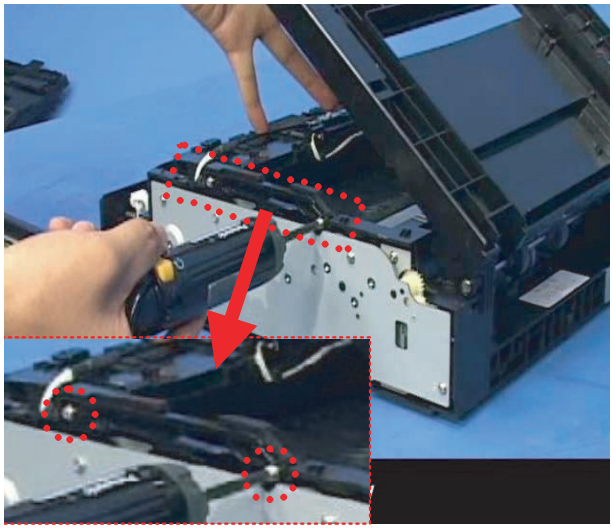
3. Release the the ELA UNIT LSU from the ELA UNIT-FRAME UPPER.



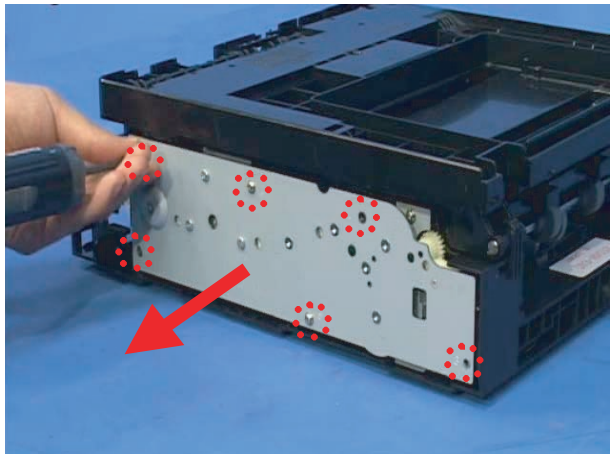
3.6 Drive Unit



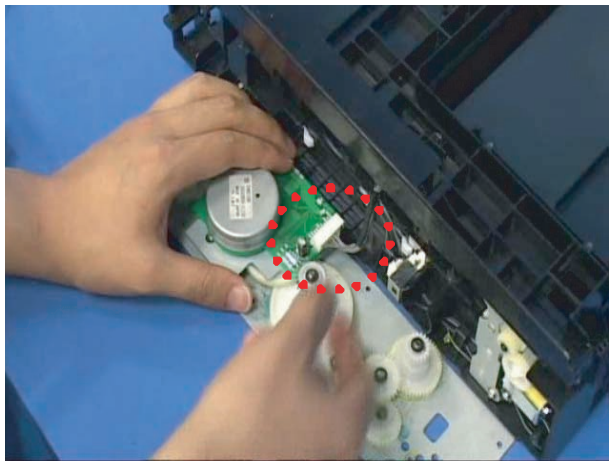
1. To remove the ELA UNIT DRIVE, remove the two screws of the LINK-RAIL UPPER and release it.



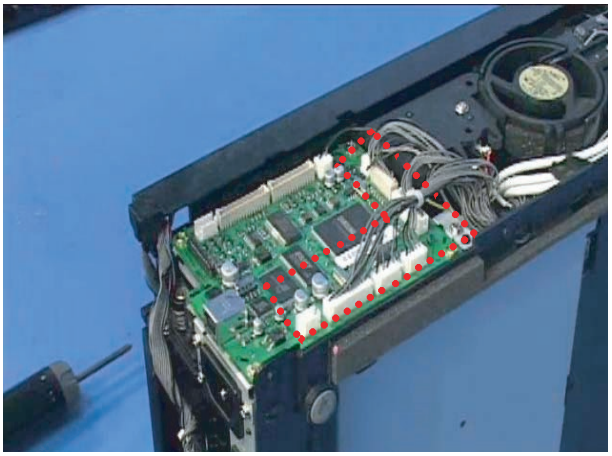
2. Remove the six screws and pull the ELA UNIT DRIVE to the direction of arrow.



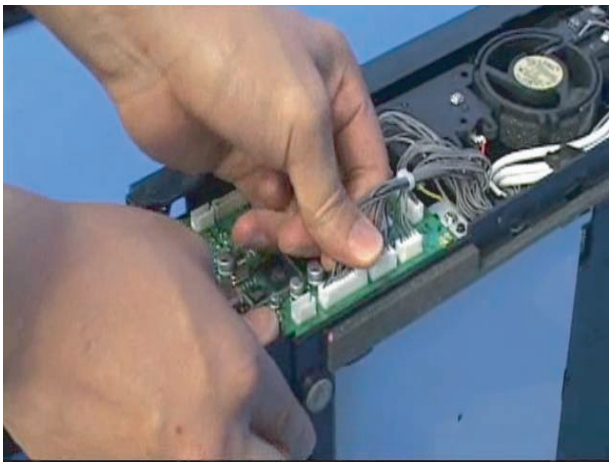
3. Remove the HARNESS-MOTOR from the ELA UNIT DRIVE.



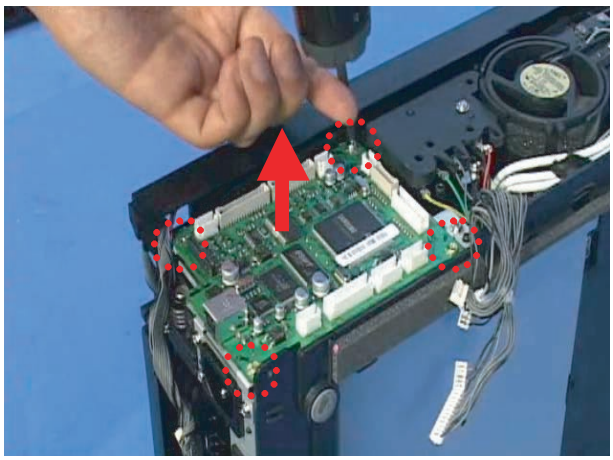
3.7 Main Board



1. Unplug the Harness, as shown below.

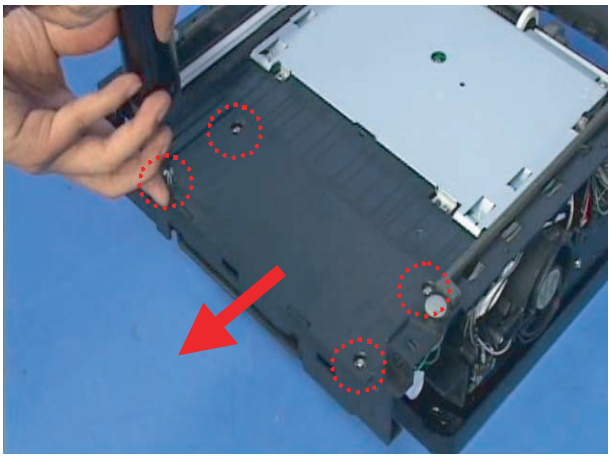


2. Remove the 4 screws, and release the Main Board from the SET.

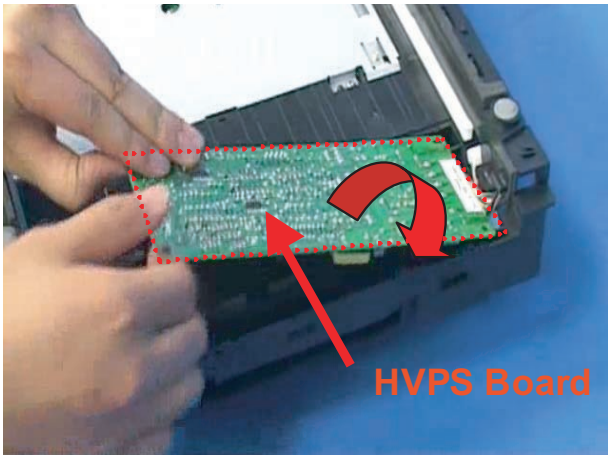


3.8 HVPS Board

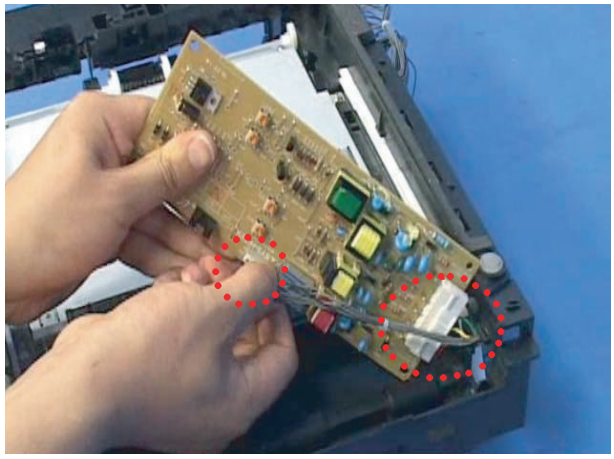
1. To remove the HVPS Board, remove the 4 screws and release the COVER HVPS.



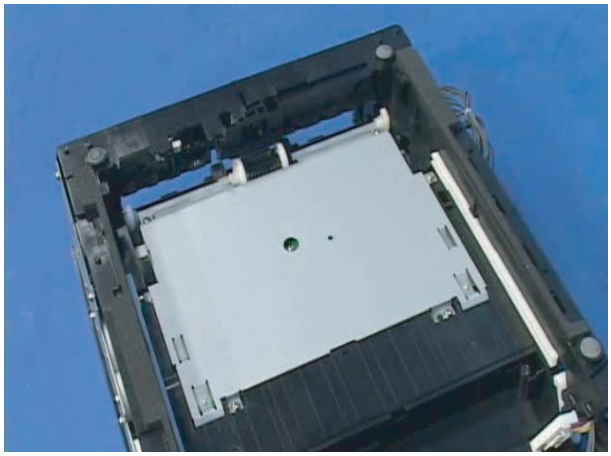
2. Turn the HVPS Board to the direction of the arrow.



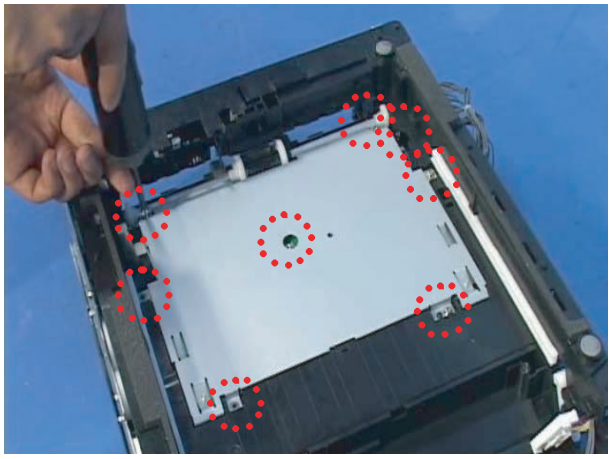
3. Remove the HARNESS-HVPS from the HVPS Board, as shown below.



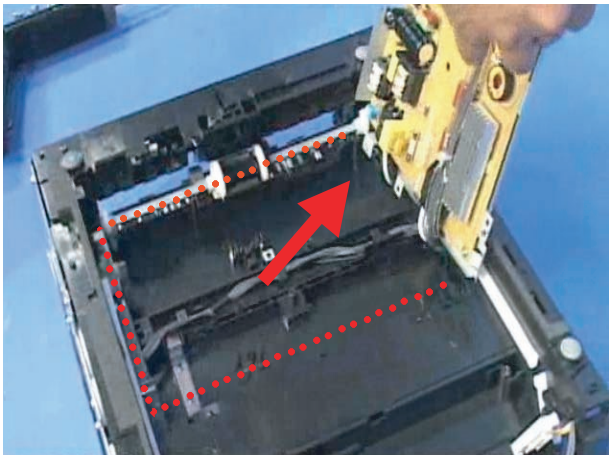
3.9 SMPS Board



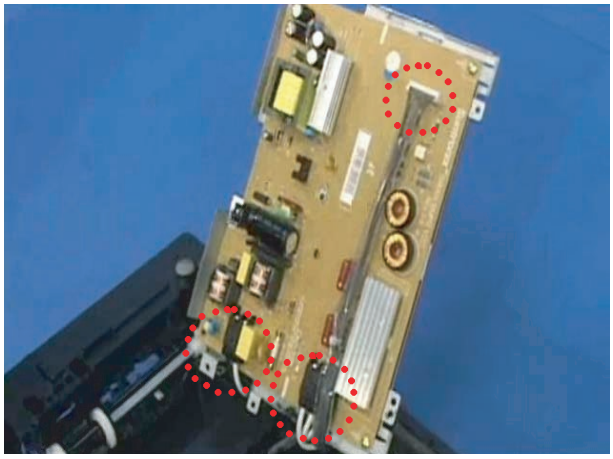
1. To release the SMPS Board, first remove the 8 screws.



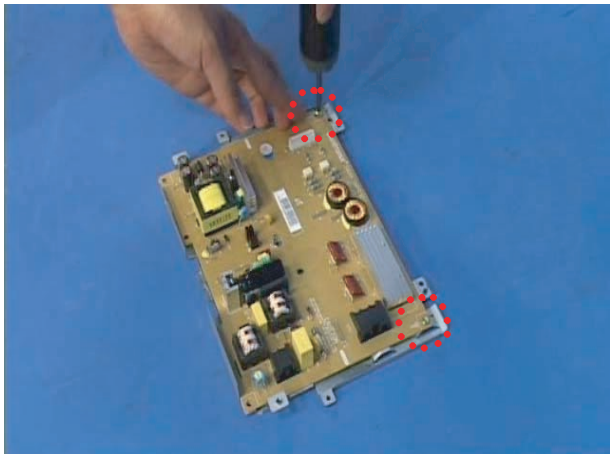
2. Lift up the SMPS Board as shown the below.



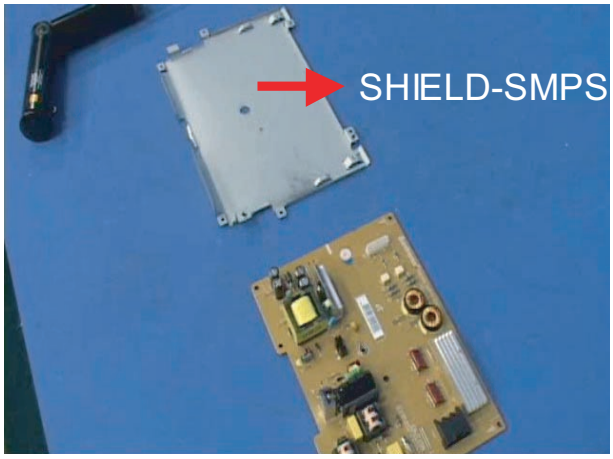
3. Remove the Harness from the SMPS Board.



4. Remove the 2 screw.

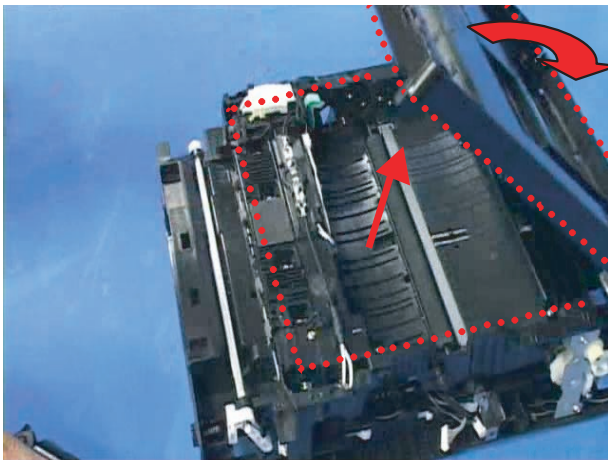


5. IF necessary, release the SMPS Board from the SHIELD-SMPS.

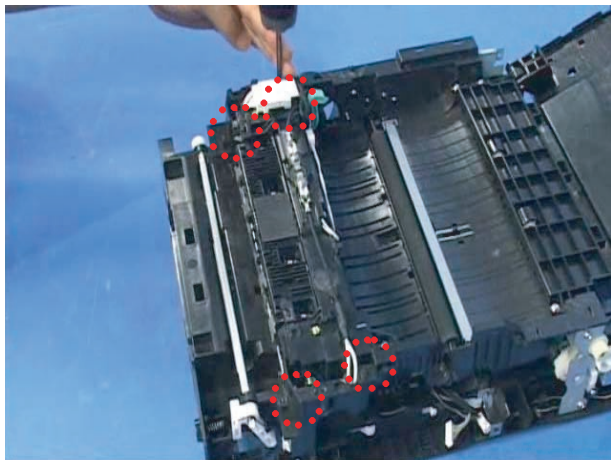


3.10 Fuser Unit

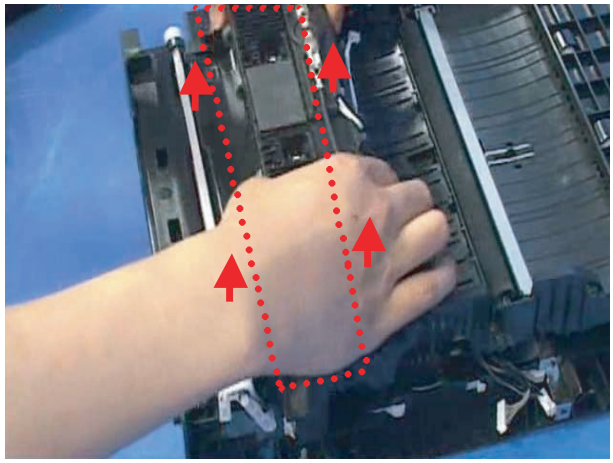
1. Lift up and turn the FRAME UPPER.



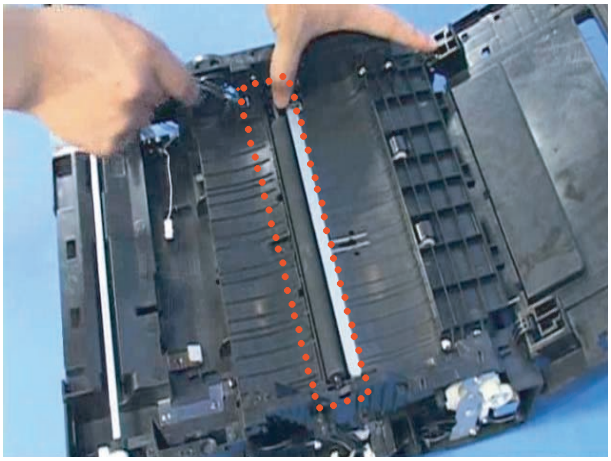
2. To release the ELA HOU-FUSER from the SET, remove the 4 screws.



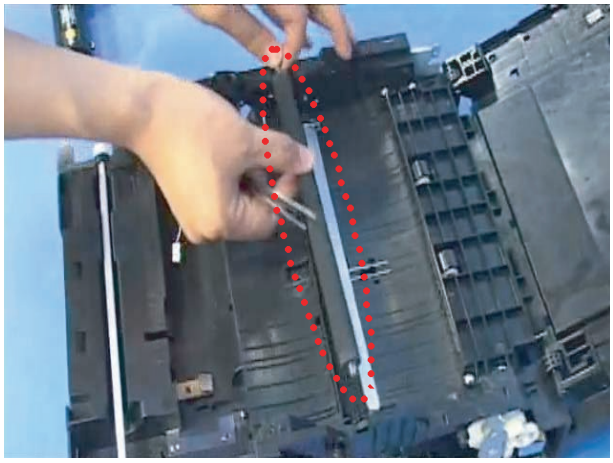
3. Release the ELA HOU-FUSER.



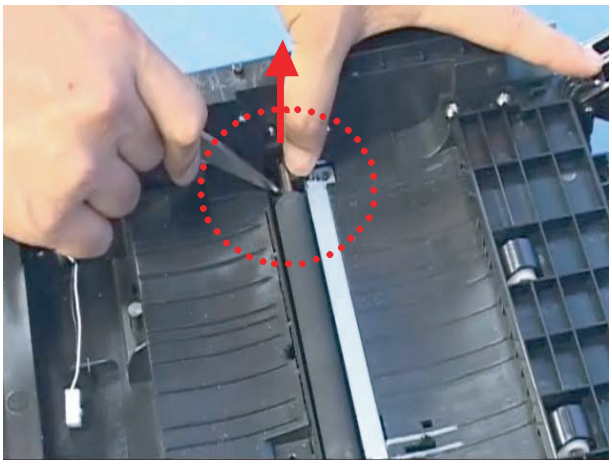
3.11 Transfer Roller



2. Release the Transfer Roller from the SET.



1. Lift up the Transfer Roller.

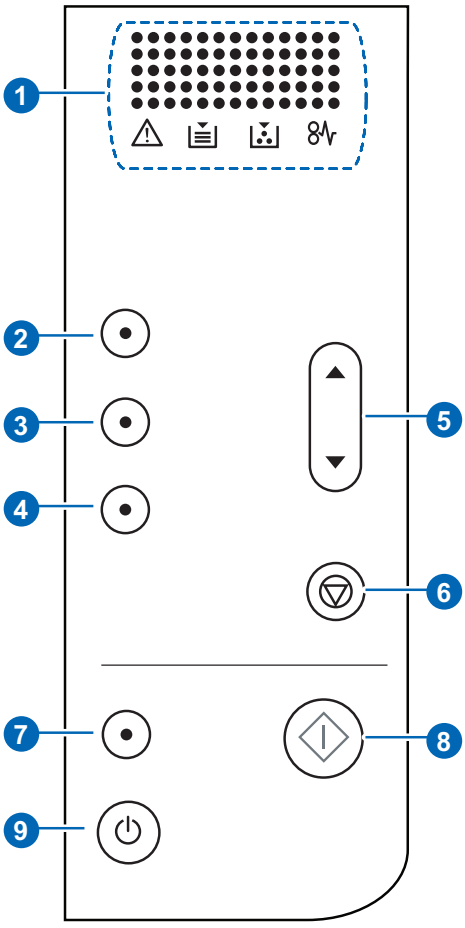


4. Adjustment and Troubleshooting

4.1 Alignment and Adjustments

This chapter describes the main functions for service, such as the product maintenance method, the test output related to maintenance and repair, Jam removing method, and so on.
It includes the contents of manual.

4.1.1 Control Panel



display	
1	Shows the current status and prompts during an operation. The message shows with specific LEDs as below. LEDs are working with short message on a display. • error LED Blinks when the error occurs on your machine. If it blinks rapidly, the machine has stopped for some reason. Check the display message to solve the problem. • paper LED Blinks when the paper in the tray is empty. • toner LED Blinks when the print cartridge is almost empty or is not Samsung-genuine cartridge. If it blinks rapidly, the print cartridge is totally empty. Check the display message and replace the print cartridge. • paper jam LED Blinks when the paper jam in the machine. Check the display message to release the jammed paper.

copy buttons	
2	**Copies**: Increases the number of printouts. Number can be changed by using up/down arrows. Possible values can be added up to 99.
3	**Reduce/Enlarge**: Press this button to reduce or enlarge an image on the paper. You have to use up/down arrows to change the size.
4	**Darkness**: Defines the degree of darkness. Use up/down arrows to change the level of light/dark in the printouts.
5	**up/down arrows**: Moves to the next value when the one of copy buttons pressed.

6	**Stop/Clear**: Stops an operation at any time. Also, You can print a machine report by pressing this button for about 4 seconds.
7	**Scan to PC**: Scans an original to your computer.
8	**Start Copy**: Starts a copy job.
9	You can power on or off the control panel by pressing and holding this button for few seconds.

4.1.2 Status of OP Panel

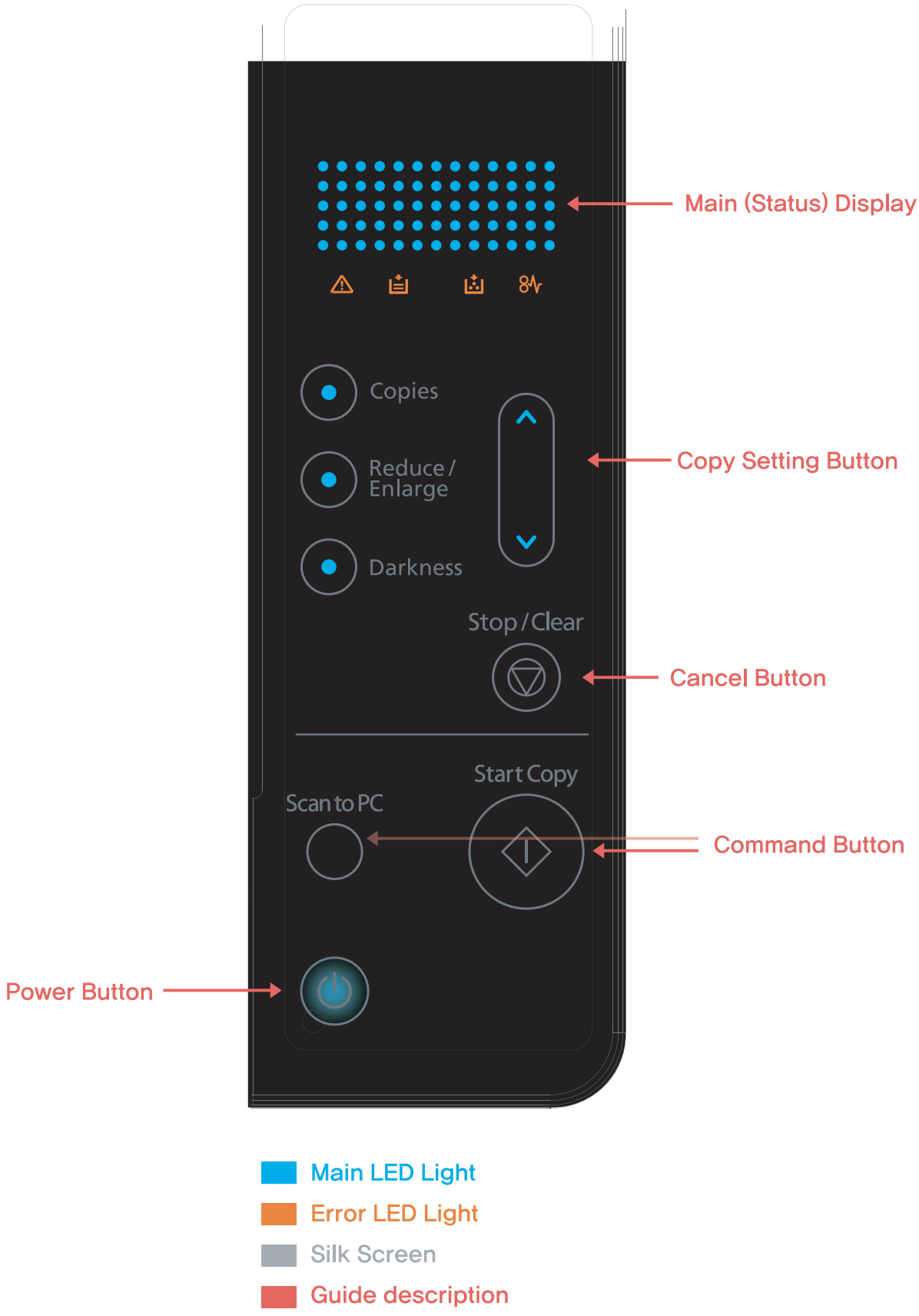
Mode	Item	Status	Status Display	Status LED	
User Mode	Paper Status	P-Empty	Moving Down Arrow head		One twinking light per 2 sec (On: 1 Sec + Off: 1 Sec)
		Jam0	Moving Down Arrow head		
		Jam1	Moving Down Arrow head		
		Jam2	Moving Down Arrow head		
	Toner Warning	Toner Low	Moving Down Arrow head		One twinking light per 5 sec (On: 2.5 Sec + Off: 2.5 Sec)
		Toner Replace	Moving Down Arrow head		
		Install Error	Moving Down Arrow head		One twinking light per 2 sec (On: 1 Sec + Off: 1 Sec)
		Toner Exhausted	T2		
		Non Samsung Toner	T3		
		Invalid Toner	T1		
	Recovable Error	Option Unit Interface Error	UE		One twinking light per 2 sec (On: 1 Sec + Off: 1 Sec)
		Front Cover Open	OPEN		
	System Error	Open Heat Error	Moving Down Arrow head		One twinking light per 2 sec (On: 1 Sec + Off: 1 Sec)
		Over Heat Error			
		Low Heat Error			
		LSU Not Ready			
		LSU Hsync Error			
		Motor Locked Error			
		Scan Lock Error			
		Internal Error			

Tech Mode	System Error	Open Heat Error	H1		One twinking light per 2 sec (On: 1 Sec + Off: 1 Sec)
		Over Heat Error	H2		
		Low Heat Error	H3		
		LSU Not Ready	L1		
		LSU Hsync Error	L2		
		Motor Locked Error	ME		
		Scan Lock Error	SE		
		Internal Error	IE		

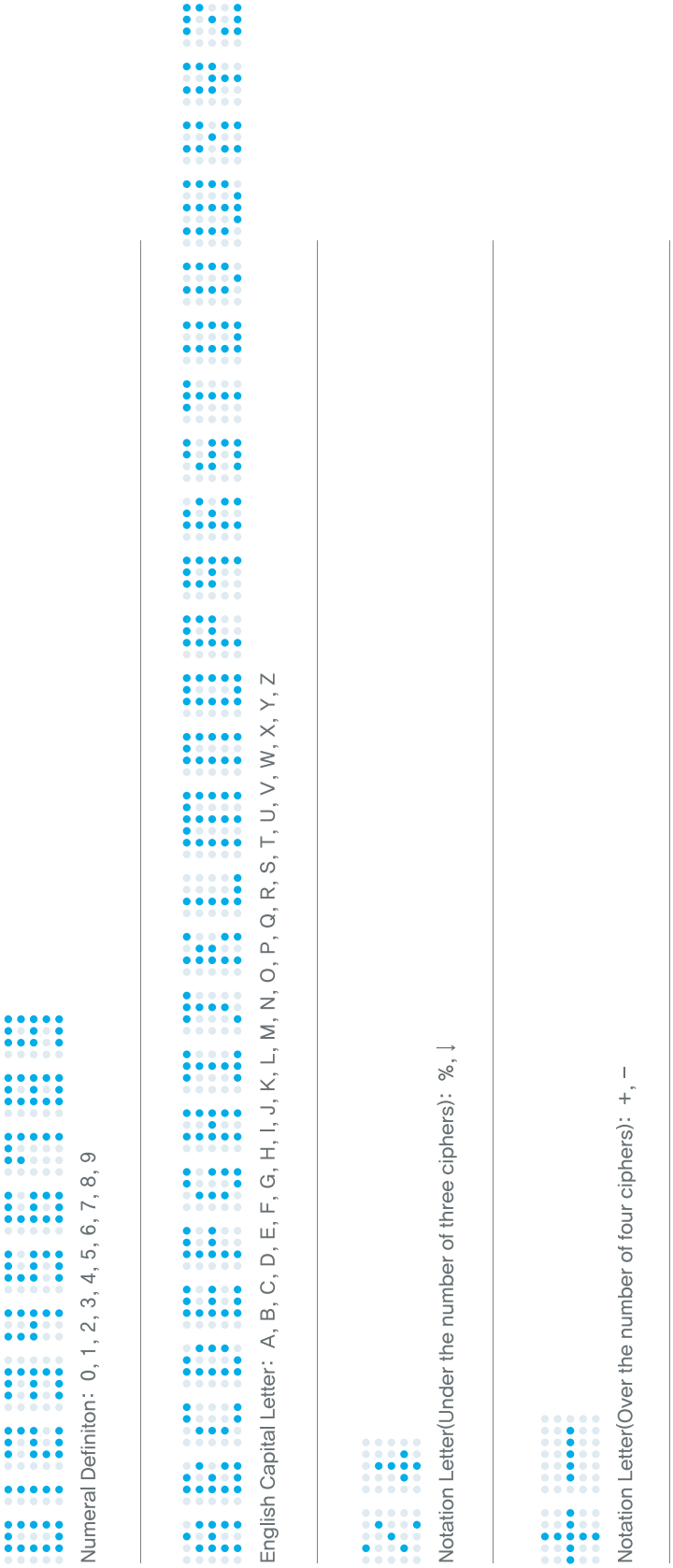
Not Supported

Moving Down Arrow head Arrow will come down frame by frame (5 Frames) and when Arrow is at Last frame Status LED will Glow.

■ OPE Design

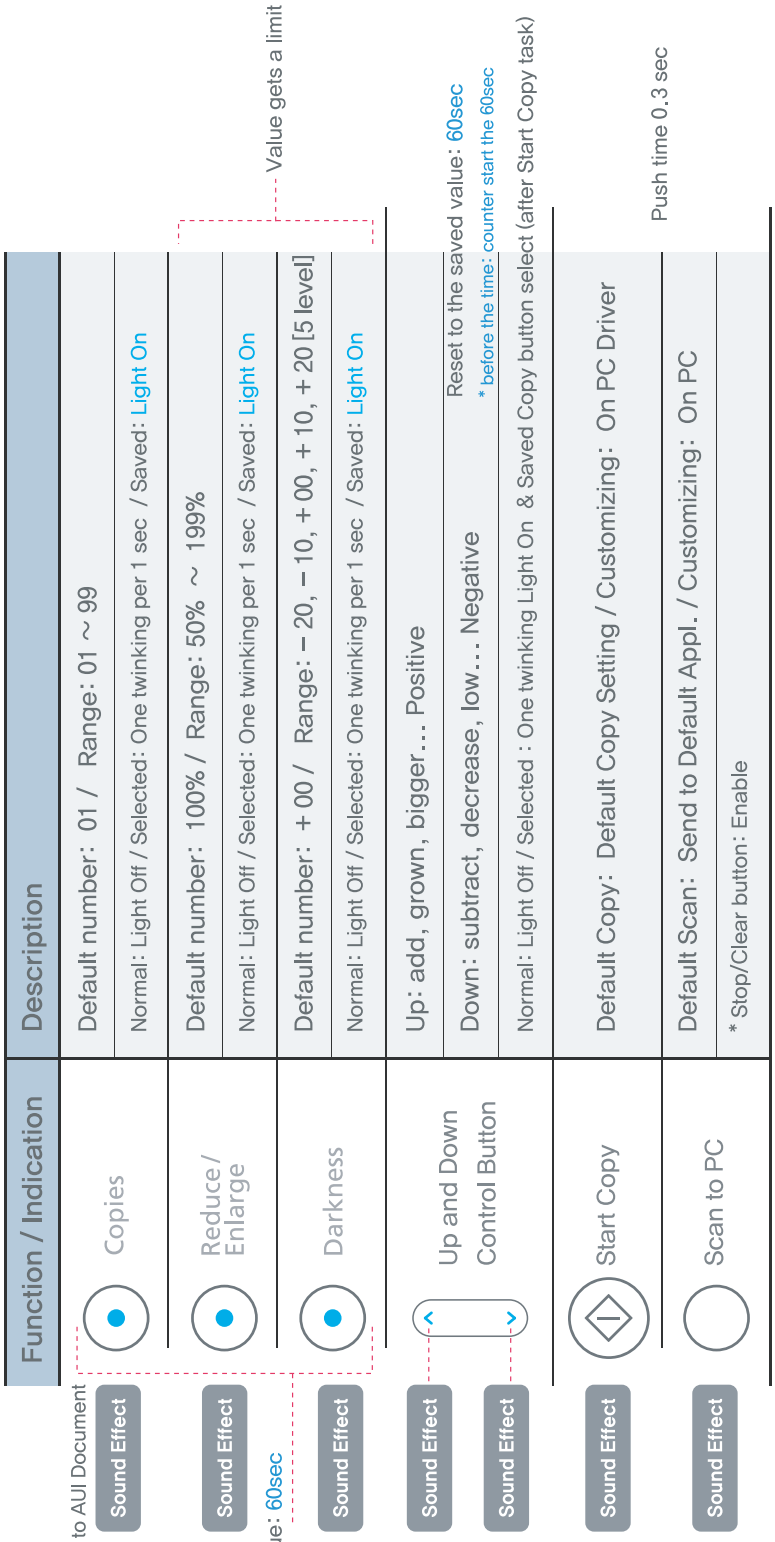

Main (Status) Display
Copies
Reduce / Enlarge
Darkness
Copy Setting Button
Stop / Clear
Cancel Button
Start Copy
Scan to PC
Command Button
Power Button
Main LED Light
Error LED Light
Silk Screen
Guide description

■ Main LED TEXT Definition

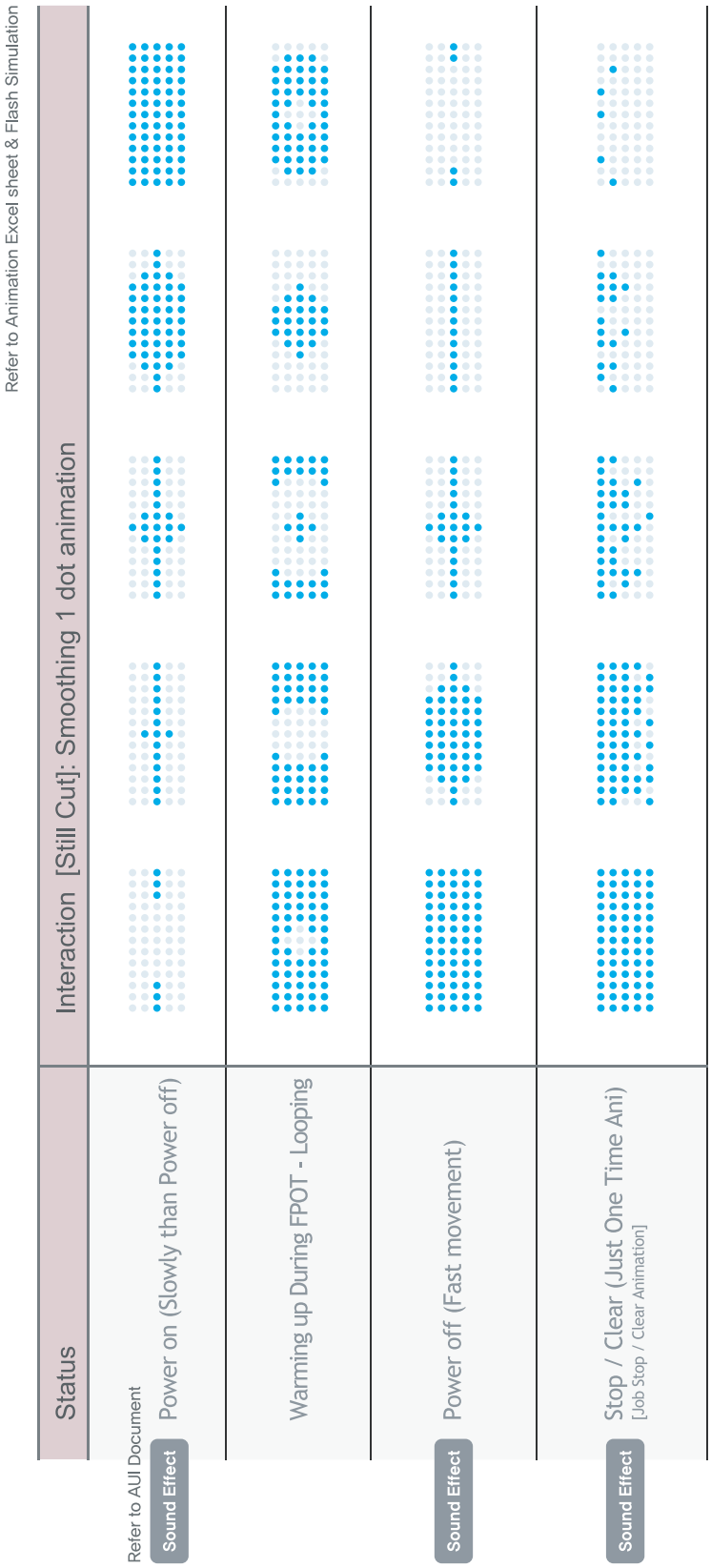

Numeral Definiton: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
English Capital Letter: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z
Notation Letter(Under the number of three ciphers): %, ↓
Notation Letter(Over the number of four ciphers): +, –

Function / Indication		Description
Refer to AUI Document Sound Effect	System Data List Print	Pushing the Cancel Button over 4 seconds
Sound Effect	Job stop / Clear	Push the Stop / Clear Button (ex: When coping – 1st stop / 2st save data clear)
Sound Effect	Power On	Pushing the Power Button over 2 seconds (just one time) * The Initial Power on_Set up(back switch): auto power on (Light on)
Sound Effect	Power Off	
Default Status: Light Off	Error	One twinking light per 2 second (On: 1 sec + Off: 1 sec)
Sound Effec Default Status: Light Off Sound Effec	Paper Empty	One twinking light per 2 second (On: 1 sec + Off: 1 sec)
Sound Effec	Toner Warning	One twinking light per 5 second (On: 2.5sec + Off: 2.5sec)
Default Status: Light Off	Toner Empty	One twinking light per 2 second (On: 1 sec + Off: 1 sec)
Sound Effect	Toner Hard-Stop Error	One twinking light per 2 second (On: 1 sec + Off: 1 sec)
Sound Effec Default Status: Light Off Sound Effect	Paper Jam	One twinking light per 2 second (On: 1 sec + Off: 1 sec)

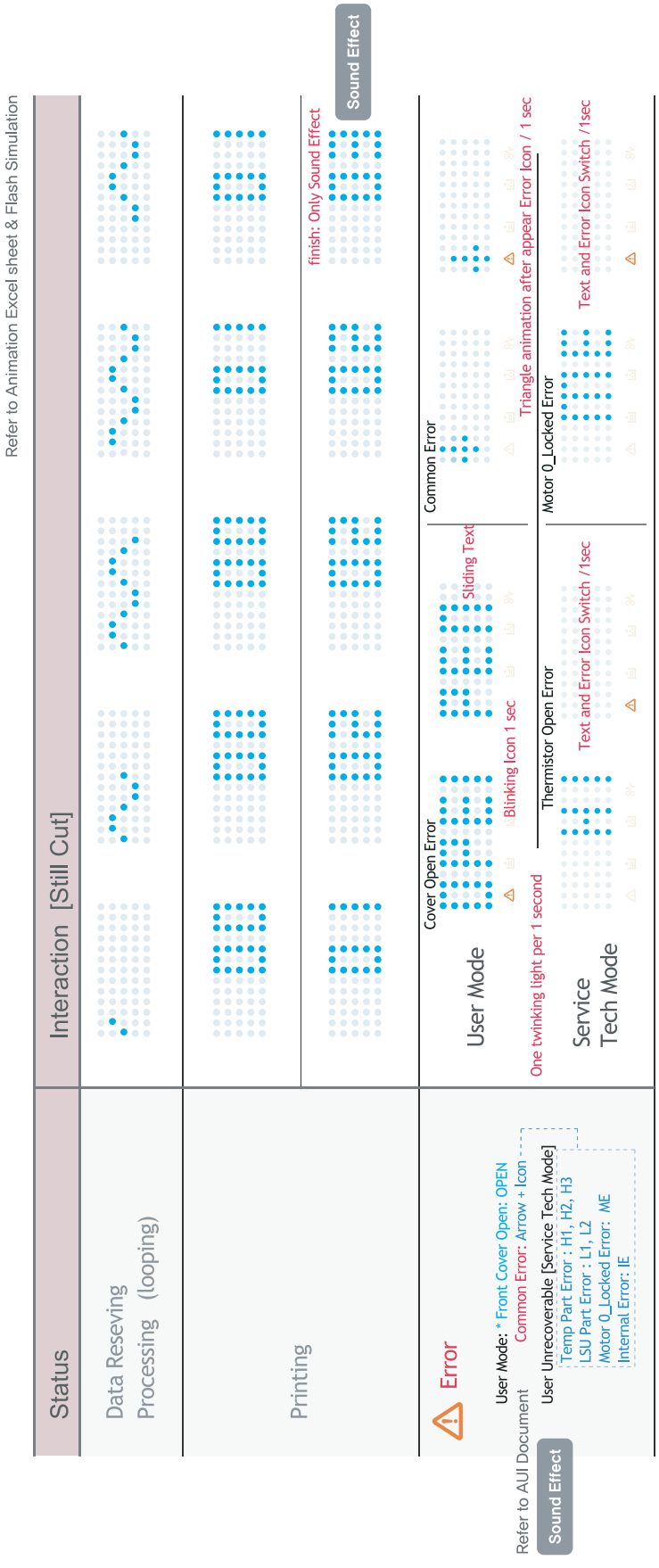
■ Function and Indication Description


Function / Indication
Description
Copies
Default number: 01 / Range: 01 ~ 99
Normal: Light Off / Selected: One twinking per 1 sec / Saved: Light On
Refer to AUI Document
Sound Effect
Reduce / Enlarge
Default number: 100% / Range: 50% ~ 199%
Normal: Light Off / Selected: One twinking per 1 sec / Saved: Light On
Value gets a limit
Sound Effect
Darkness
Default number: + 00 / Range: – 20, – 10, + 00, + 10, + 20 [5 level]
Normal: Light Off / Selected: One twinking per 1 sec / Saved: Light On
Reset to the saved value: 60sec
* before the time: counter start the 60sec
Sound Effect
Up and Down Control Button
Up: add, grown, bigger... Positive
Down: subtract, decrease, low... Negative
Reset to the saved value: 60sec
* before the time: counter start the 60sec
Pushing Moving Value
1step movement 10ms
Sound Effect
Sound Effect
Start Copy
Normal: Light Off / Selected : One twinking Light On & Saved Copy button select (after Start Copy task)
Default Copy: Default Copy Setting / Customizing: On PC Driver
Push time 0.3 sec
Sound Effect
Scan to PC
Default Scan: Send to Default Appl. / Customizing: On PC
* Stop/Clear button: Enable
Sound Effect

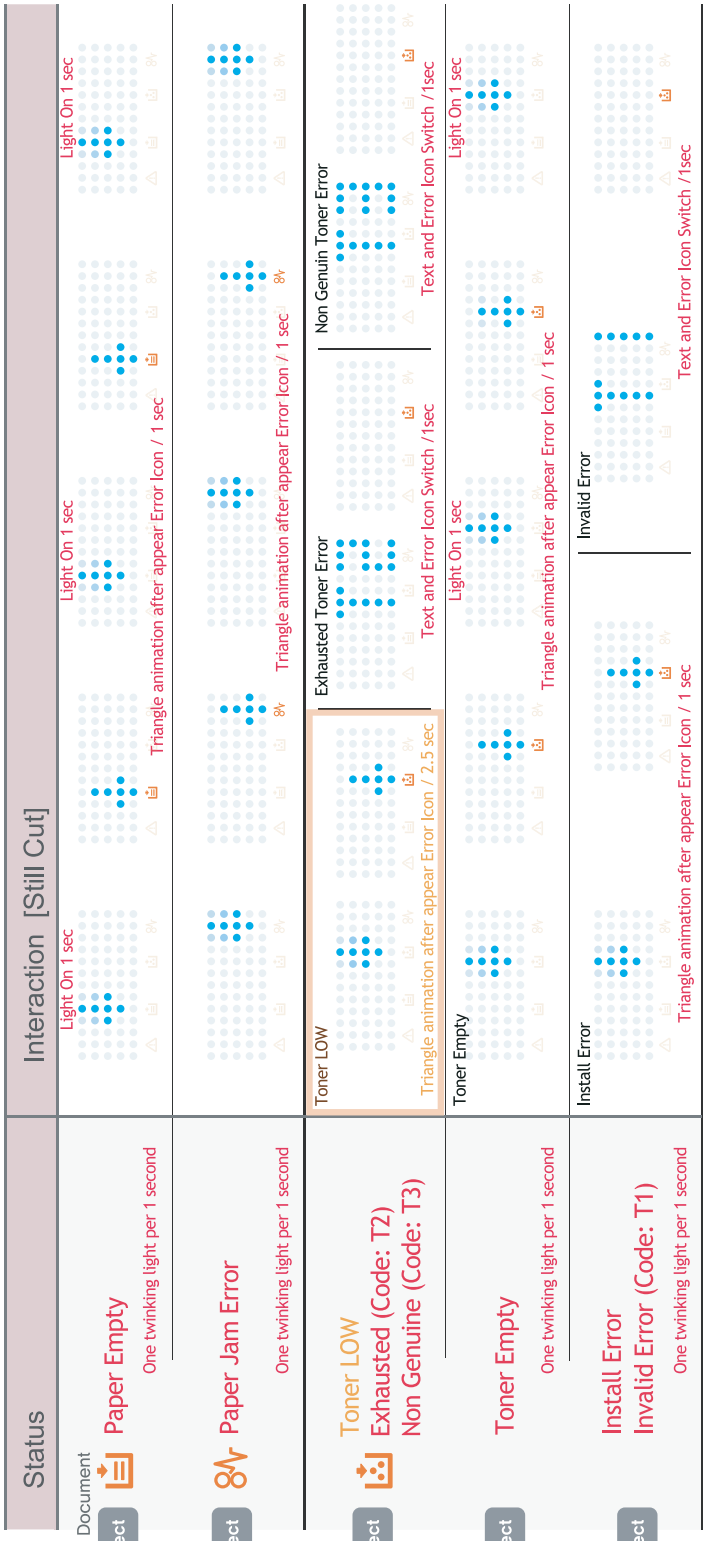
■ LED Display Interaction


Refer to Animation Excel sheet & Flash Simulation
Status
Interaction [Still Cut]: Smoothing 1 dot animation
Refer to AUI Document
Sound Effect
Power on (Slowly than Power off)
Warming up During FPOT - Looping
Sound Effect
Power off (Fast movement)
Sound Effect
Stop / Clear (Just One Time Ani)
[Job Stop / Clear Animation]

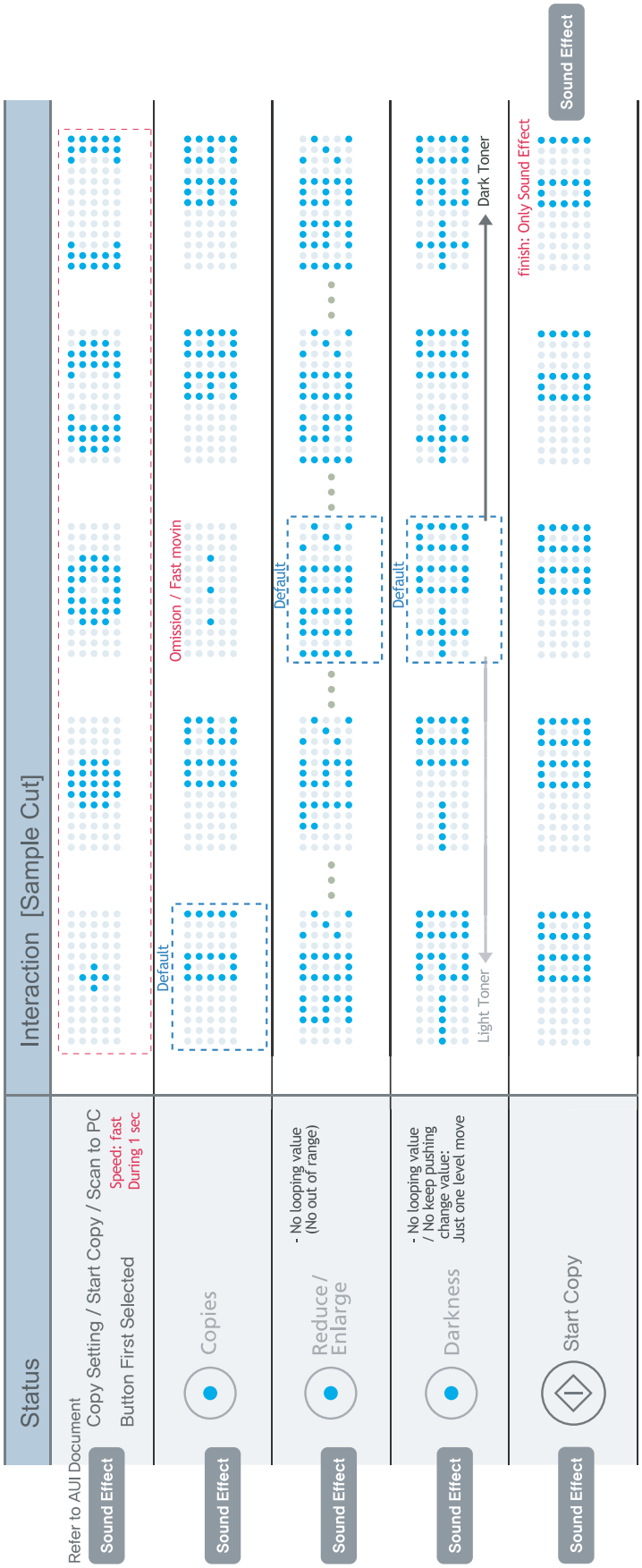
■ LED Display Interaction


Refer to Animation Excel sheet & Flash Simulation
Status
Interaction [Still Cut]
Data Reseving
Processing (looping)
Printing
finish: Only Sound Effect
Sound Effect
Error
User Mode
Service
Tech Mode
Cover Open Error
Blinking Icon 1 sec
Sliding Text
Common Error
Triangle animation after appear Error Icon / 1 sec
One twinking light per 1 second
Thermistor Open Error
Text and Error Icon Switch /1sec
Motor 0_Locked Error
Text and Error Icon Switch /1sec
User Mode: * Front Cover Open: OPEN
Common Error: Arrow + Icon
Refer to AUI Document
Sound Effect
User Unrecoverable [Service Tech Mode]
Temp Part Error : H1, H2, H3
LSU Part Error : L1, L2
Motor 0_Locked Error: ME
Internal Error: IE
User Unrecoverable [Service Tech Mode]
- Temp Part Error [Thermistor Open, Over Heat, Low Heat : H1, H2, H3]
- LSU Part Error [Black LSU Look(not ready), Black Hsync(LSU Hsync) : L1, L2]
- Motor 0_Locked Error(Main BLDC Motor Locked Error): ME
- Scan Lock Error : SE
- Internal Error: IE

■ LED Display Interaction


Status
Interaction [Still Cut]
Refer to AUI Document
Sound Effect
Paper Empty
One twinking light per 1 second
Light On 1 sec
Triangle animation after appear Error Icon / 1 sec
Light On 1 sec
Sound Effect
Paper Jam Error
One twinking light per 1 second
Triangle animation after appear Error Icon / 1 sec
Sound Effect
Toner LOW
Exhausted (Code: T2)
Non Genuine (Code: T3)
Toner LOW
Triangle animation after appear Error Icon / 2.5 sec
Exhausted Toner Error
Text and Error Icon Switch /1sec
Non Genuin Toner Error
Text and Error Icon Switch /1sec
Sound Effect
Toner Empty
One twinking light per 1 second
Toner Empty
Light On 1 sec
Triangle animation after appear Error Icon / 1 sec
Light On 1 sec
Sound Effect
Install Error
Invalid Error (Code: T1)
One twinking light per 1 second
Install Error
Triangle animation after appear Error Icon / 1 sec
Invalid Error
Text and Error Icon Switch /1sec

■ LED Display Interaction

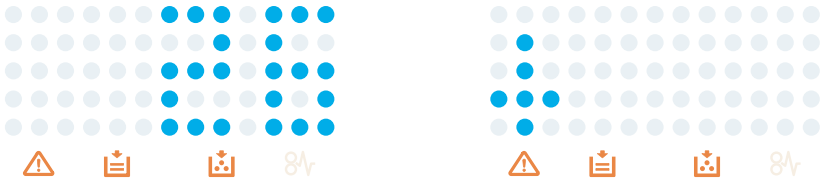


■ Multi Error Definition

Do not everything togling information when multi-error happened and main-display marks prierity unfirmation and gives response in under error icons.

ex) Common Error + Toner Empty + Paper Jam

When produce error during printing, printing and error status need togling that show intersection.



ex) When printing paper 26th + Common Error + Paper Empty + Toner Low

Priority
1. Front Cover Open Error
2. Common Error + Hard Stop Toner Error
3. Paper Jam
4. Paper Empty
5. Toner Low / Empty

4.1.3 Manu Map

4.1.3.1 Table of Manu Map

Key		1 Symbol + 2 Charater	Logan	Default Value	Descriptions
Direct Key	--▶	Up and Down key			
1. Reduce/Enlarge		+50 to +199	Controlled through Key	100	100 signify Actual Size
2. Copies		1 to 99	Controlled through Key	1	
2 .Darkness	1	-20	5 level (-20, -10, +00, +10, +20)	+00	
	2	-10			
	3	+00			
	4	+10			
	5	+20			
4.Stop/Cancel Key (Hold for 4 SEC on idle screen mode)	1	System Data	Hold STOP key for 4 sec than system data report will be printed.		
Tech Mode	DS	CA CC FU	For Data Setup: Power ->Copies-->ScanTO UP/DOWN key to scroll for Sub menus. Need to assign sub menu number. CA - Clear All Mem, CC - Clear Count, FU- Flash Upgrade		
	M	ST DT RT PT SH	For Machine Test: Power ->Copies-->ScanTO UP/DOWN key to scroll for Sub menus. Need to assign sub menu number. Like 01 - Switch Test, 02 - DRAM Test,		
	RP	SD ER	For Report Power ->Copies-->ScanTo-->DOWN-->Start System Data Report print 01- System Data 02- Error report		
Factory Mode	FC	Factory Clear	Power ->Down-->ScanTo-->START		User can scroll thgrough Aging test menu by using UP/Down Key
	AT	A A4	Power ->Down-->ScanTo->UP A A4 - Aging testA4 A LT - Aging testLT A 01 - Aging test2 A 02 - Aging test2 A 03- Aging test3 A 04- Aging test4		
		A LT			
		A 01			
		A 02			
		A 03			
		A 04			

■ Direct Key

1	Copies	1→99 * Default : 1
2	Reduce/Enlarge	Would support: +50 ~ +199%
3	Darkness	This key is to select darkness level. 5 levels are supported.
4	Stop/Cancel	This key is used to stop the job being done or use in special key sequence.
5	UP	To increment/scroll UP
6	Down	Decrement/Scroll Down
7	StartCopy	To start Copy Job
8	ScanTo PC	To Start PC Scan Job
9	Power	To Power ON/Off

■ Status LED

1	Error Led	This Led will glow if there is any general error.
2	Paper Status	This led will glow if there is paper Empty condition.
3	Toner Status	This Led will glow if there is Toner error condition
4	Paper Jam Status	This led will glow if there is paper Jam condition.

4.1.3.2 Tech mode

▶ Report Printing

• Hold 'STOP/CLEAR' key for 4 sec to Print System Data List.

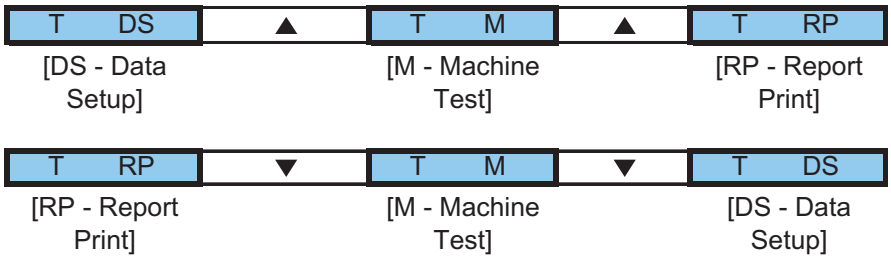
▶ Tech Mode Error Display

• Press Power --> Down --> Start --> Up to set Tech Mode. Use the same sequence to change the mode to user mode.

User Unrecoverable [Service Tech Mode]
- Temp Part Error [Thermistor Open, Over Heat, Low Heat : H1, H2, H3]
- LSU Part Error [Black LSU Look(not ready), Black Hsync(LSU Hsync) : L1, L2]
- Motor 0_Locked Error(Main BLDC Motor Locked Error) : ME
- Scan Lock Error : SE
- Internal Error : IE

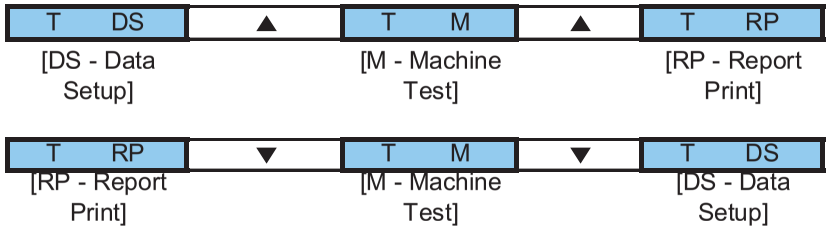
▶ Tech Mode Test

• Press Power --> Copies --> ScanTO to go to Data Setup Menu. Following Menu would be displayed after pressing Power --> Copies --> ScanTO key sequence.



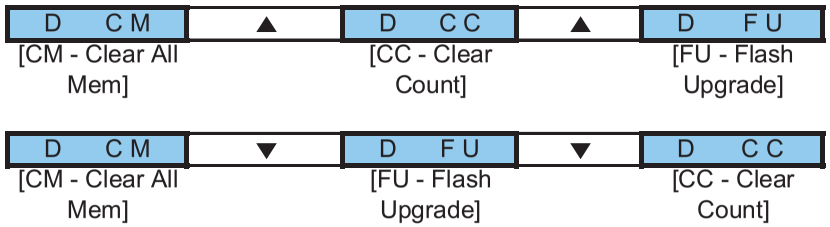
Tech Mode Error Display	Press **Power-->Down-->Start-->Up** to set Tech Mode. Use the same sequence to change the mode to user mode.
Tech Mode Tests	

Press **Power ->Copies-->ScanTO** to go to Data Setup Menu. Following Menu



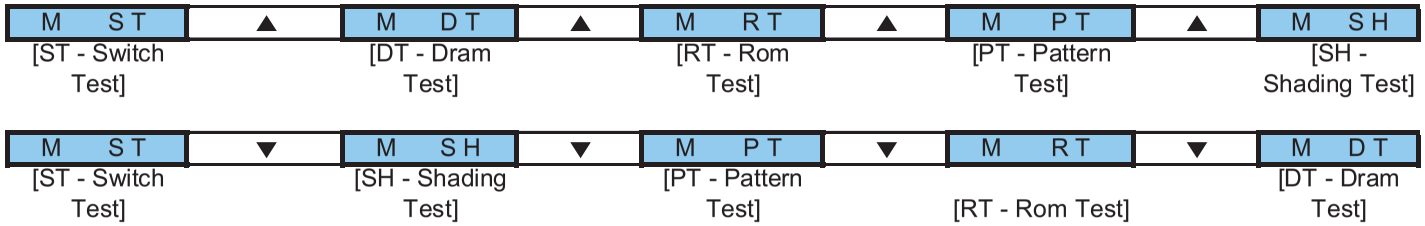
Data Setup

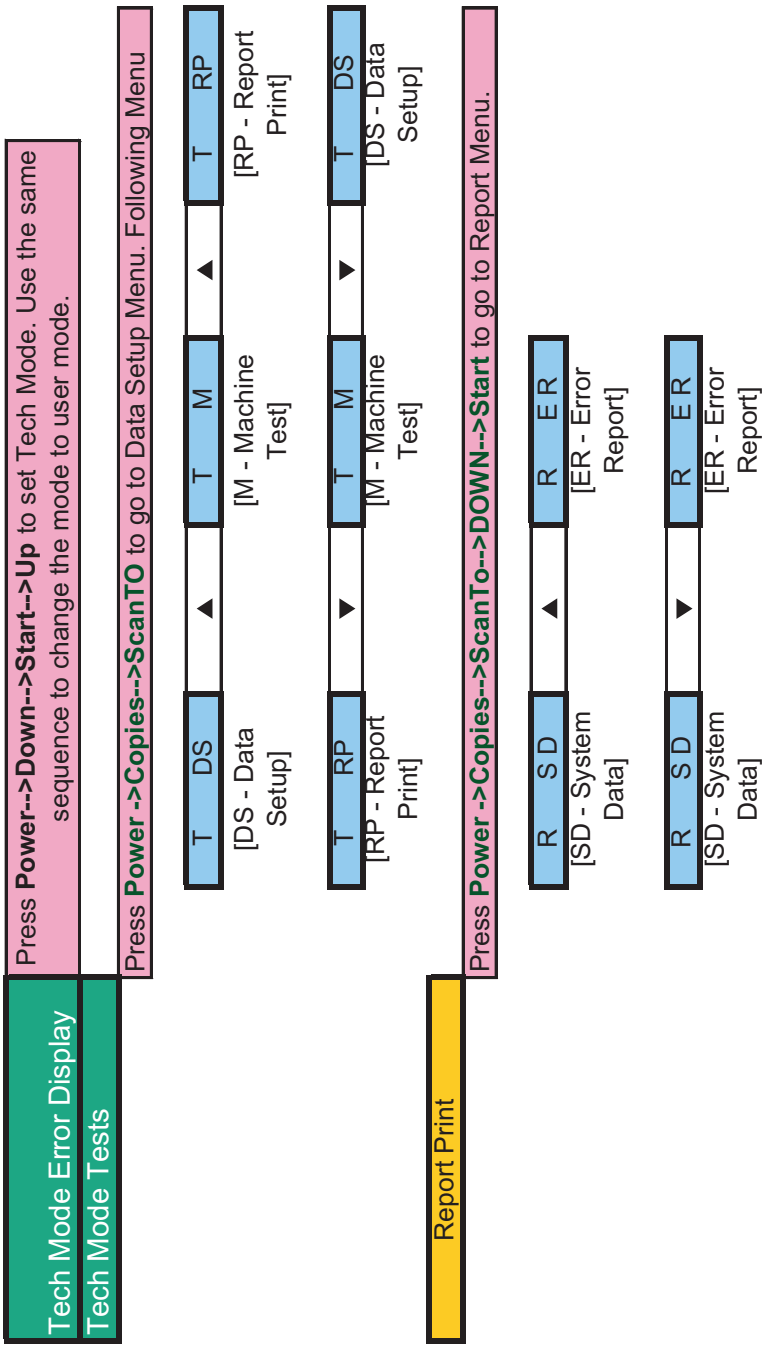
Press **Power ->Copies-->ScanTO-->Start** to go to Data Setup Menu. Following Menu would be displayed after pressing **Power ->Copies-->ScanTO key** sequence.



Macine Test

Press **Power ->Copies-->ScanTo-->UP-->Start** to go to Machine Test Menu. Following Menu would be displayed after pressing **Power ->Reduce-->ScanTo** key sequence.




Tech Mode Error Display
Tech Mode Tests
Press Power-->Down-->Start-->Up to set Tech Mode. Use the same sequence to change the mode to user mode.
Press Power ->Copies-->ScanTO to go to Data Setup Menu. Following Menu
T DS
[DS - Data Setup]
T M
[M - Machine Test]
T RP
[RP - Report Print]
T RP
[RP - Report Print]
T M
[M - Machine Test]
T DS
[DS - Data Setup]
Report Print
Press Power ->Copies-->ScanTo-->DOWN-->Start to go to Report Menu.
R SD
[SD - System Data]
R ER
[ER - Error Report]
R SD
[SD - System Data]
R ER
[ER - Error Report]

Factory Clear

Press **Power ->Down-->ScanTo-->START** to go to Factory Clear Menu.
Following Menu would be displayed after pressing **Power ->Down-->ScanTo-->START** key sequence.

There will be 4 options for factory clear:-
UK
US
KR
CH

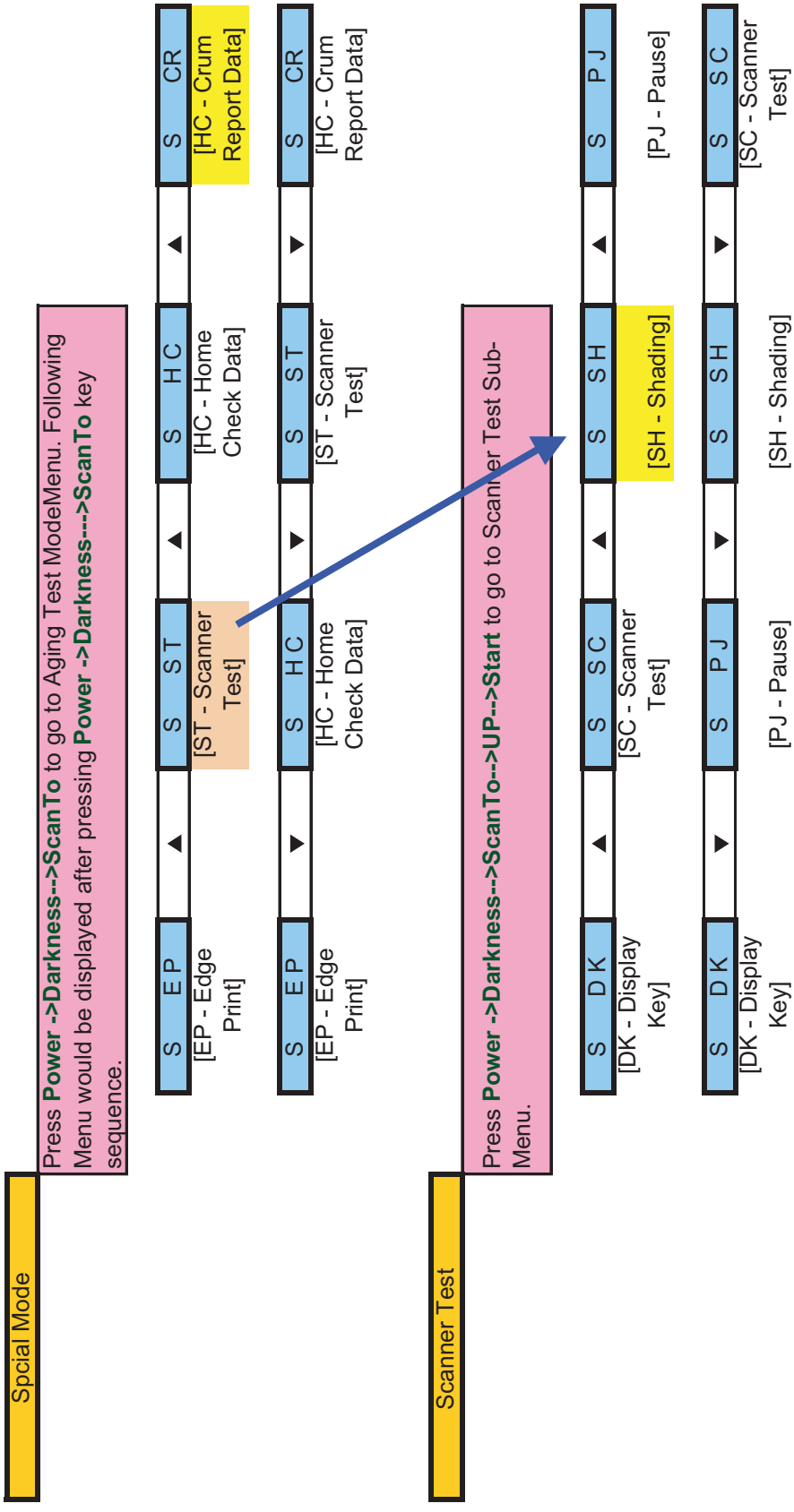
C UK	▲	C US	▲	C KR	▲	C CH	
UK,US,KP,CH		UK,US,KP,CH		UK,US,KP,CH		UK,US,KP,CH	
C CH	▼	C KR	▼	C US	▼	C UK	
UK,US,KP,CH		UK,US,KP,CH		UK,US,KP,CH		UK,US,KP,CH	

System Data List

Options	Item	Status
Paper Setting		
Tray Paper	[LTR/A4/EXE/A5/B5/A6]	A4
Copy Setup		
Darkness	[-20/-10/+00/+10/+20]	+00
Original Type	[Text / Text/Photo / Photo]	Text/Photo
Reduce/Enlarge	[50%-199%]	100%
No. of Copies	[1-99]	1
Machine Setup		
Language	[English/Traditional Chinese...]	Korean

Korea

Firmware Version	:	0.922
Engine Version	:	V0.70.01
Emulation Version	:	QPDL 1.42 03-29-2007
Total Page Counts	:	0
Toner Remaining	:	99%
Toner Page Counts / Status	:	23 / Toner Normal
Capacity	:	2K
Replaced Toner Counts	:	0
Install Date	:	Installed
Platen Scan Page Counts	:	0
USB SERIAL NO.	:	NOT EXIST
MODEL(SCX-4500 Series)	:	Korea
Supplier /Serial No.	:	SAMSUNG(Korea) CRUM-07051476656
Service Date	:	MMDDYYYY


Spcial Mode
Press Power ->Darkness-->ScanTo to go to Aging Test ModeMenu. Following Menu would be displayed after pressing Power ->Darkness-->ScanTo key sequence.
S E P
[EP - Edge Print]
S S T
[ST - Scanner Test]
S H C
[HC - Home Check Data]
S CR
[HC - Crum Report Data]
Scanner Test
Press Power ->Darkness-->ScanTo-->UP-->Start to go to Scanner Test Sub-Menu.
S D K
[DK - Display Key]
S S C
[SC - Scanner Test]
S S H
[SH - Shading]
S P J
[PJ - Pause]

Spcial Mode

Press **Power ->Darkness-->ScanTo** to go to Aging Test ModeMenu. Following Menu would be displayed after pressing **Power ->Darkness--->ScanTo** key sequence.

S E P	▲	S S T	▲	S H C	▲	S CR
[EP - Edge Print]		[ST - Scanner Test]		[HC - Home Check Data]		[HC - Crum Report Data]

S E P	▼	S H C	▼	S S T	▼	S CR
[EP - Edge Print]		[HC - Home Check Data]		[ST - Scanner Test]		[HC - Crum Report Data]

Supplies Information Report

Model Name : SCX-4500 Series

Supplier	: SAMSUNG(Korea)
Vendor ID	: MT450EXP
Install Date	: Instaled
Product Date	: 200607
CRUM Serial NO	: CRUM-07051476656
CRUM Capacity	: 2.0K
Toner Remaining	: 99 %
Life Remaining	: 99 %
Page Counts	: 18
OPC Cycle Count(MA:E-2sec)	: 383
Dot Counts	: 27849236
Toner Status	: 0(Normal)
Replace Toner Counts	: 0
OPC Cycle Count Limit(MA:E-2sec)	: 31000

Current Toner Exhausted

Toner Exhausted Max

4.1.3.3 System Data List

System Data List

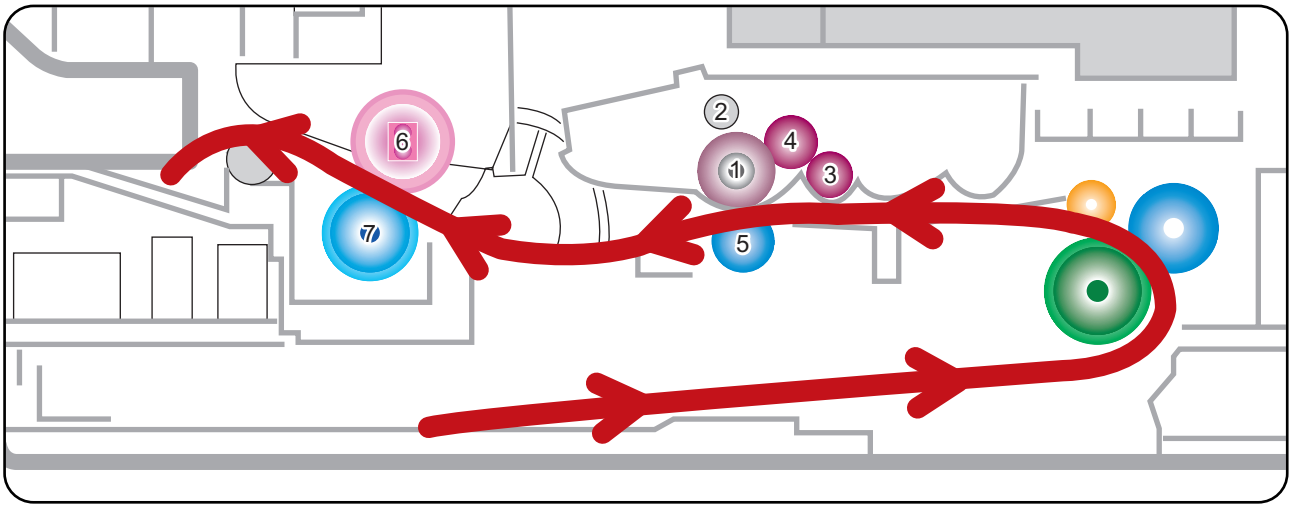
Options	Item	Status
Paper Setting		
Tray Paper	[LTR/A4/EXE/A5/B5/A6]	A4
Copy Setup		
Darkness	[-20/-10/+00/+10/+20]	+00
Original Type	[Text / Text/Photo / Photo]	Text/Photo
Reduce/Enlarge	[50%-199%]	100%
No. of Copies	[1-99]	1
Machine Setup		
Language	[English]	English

Firmware Version	:	1.00
Engine Version	:	V0.70.07
Emulation Version	:	SPL 1.43 06-07-2007
Total Page Counts	:	512
Toner Remaining	:	18%
Toner Page Counts / Status	:	413 / Toner Normal
Capacity	:	1K
Replaced Toner Counts	:	6
Install Date	:	Installed
Platen Scan Page Counts	:	32
Supplier /Serial No.	:	SAMSUNG(Export) CRUM-07061848746
Service Date	:	JUN-19-2007

4.1.4 Report Printing Condition

Status (SM)	UI(LCD)	PC-Print out	Copy out	Report out
Toner Low	Animation	Print	Print	Print
Toner Empty	Animation	Print	Print	Print
Toner Install Error	Animation	No Print	No Print	No Print
Invalid Toner	!! T1	No Print	No Print	Print(Tech mode)
Toner Exhausted	!! T2	No Print	No Print	Print(Tech mode)
Non Genuine Toner	!! T3	Print	Print	Print

4.1.5 Table. Periodic Images according to Rollers

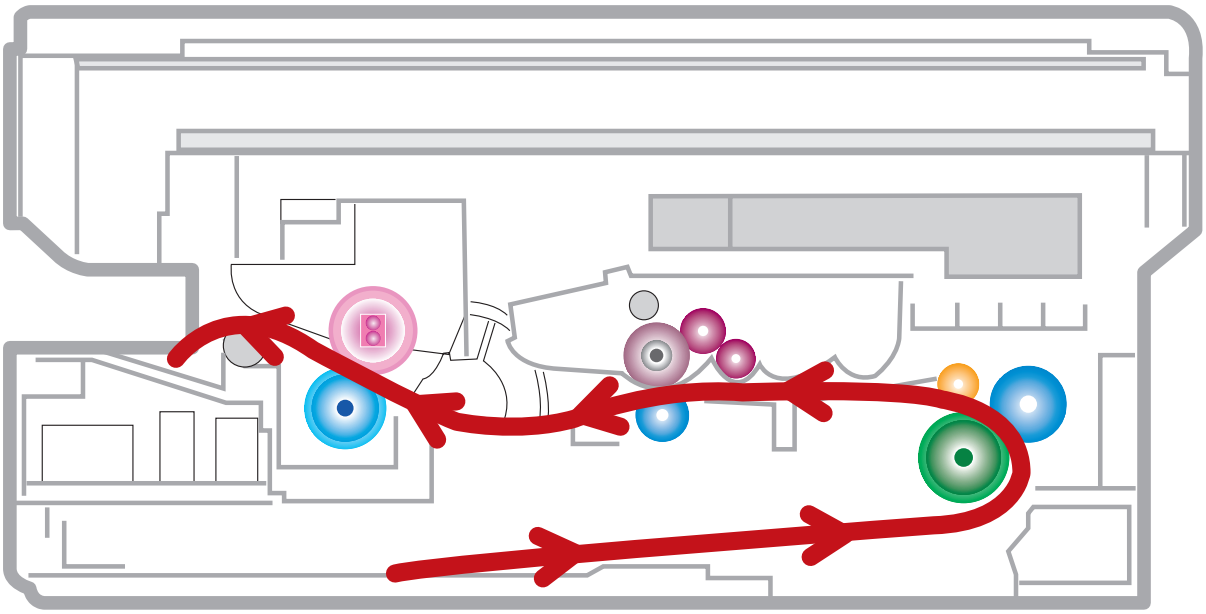


No	Roller	Period	Phenomenon
1	OPC Drum	62.8 mm	White and Black Spots
2	Charge Roller	26.7 mm	White /Black Spot and Periodic Band
3	Supply Roller	46.9 mm	Periodic Band (by little difference of density)
4	Developing Roller	35.2 mm	White Spot, Horizontal black band
5	Transfer Roller	47.1 mm	Periodic Band (by little difference of density)
6	Heat Roller	77.09 mm	Black Spot and Image Ghost
7	Pressure Roller	75.36 mm	Black Spot on Enter Blackside

4.1.6 Paper Path and Jam Error Solution

When removing paper that is jammed in the printer, if possible always pull the paper in the direction that it nomally moves so as not to damage internal components. Always pull firmly and evenly; do not jerk the paper. if the paper lears, ensure that all fragments of paper are removed; otherwise a jam will occur again.

4.1.6.1 Paper Path



4.1.6.2 Clearing paper jams

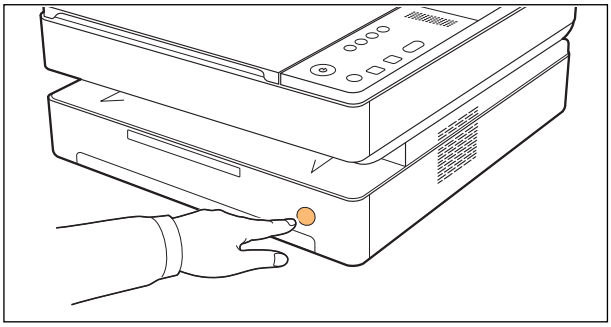
Refer to the table below to locate and clear the paper jam.

Status display	Explanation
Paper jam LED( ) blinks	In the paper feed area and rear the machine
	Rear and Inside the machine
	In the exit area

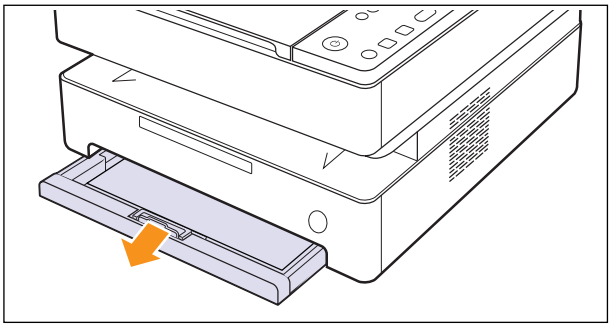
4.1.6.2(a) In the paper feed area and rear the machine

If paper is jammed in the paper feed area and rear the machine, follow the next steps to release the jammed paper.

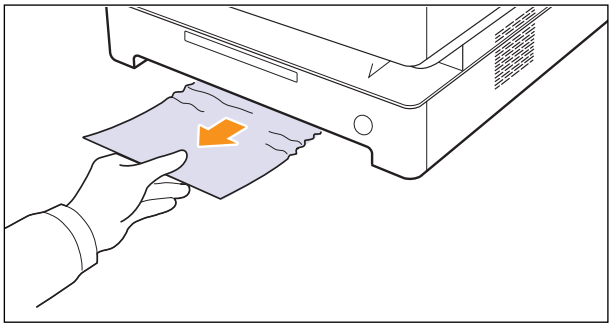
1. Press the tray open button.



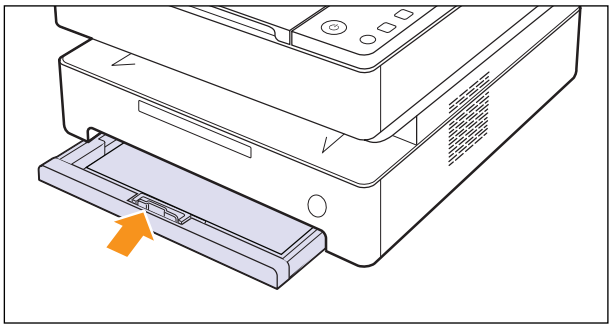
2. Pull the tray open.



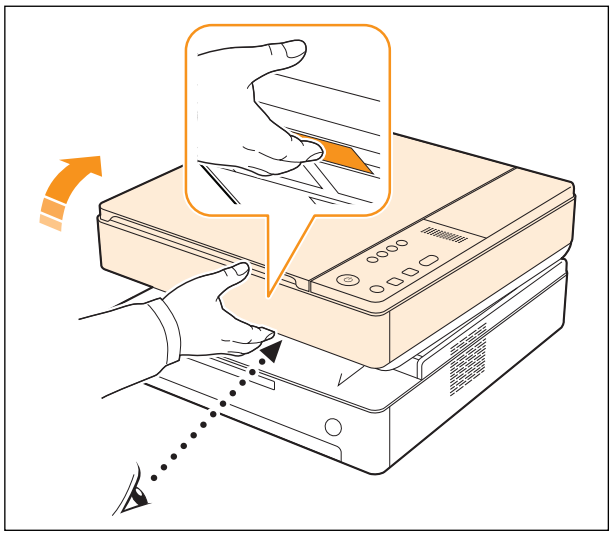
3. Remove the jammed paper by gently pulling it straight out as shown below.



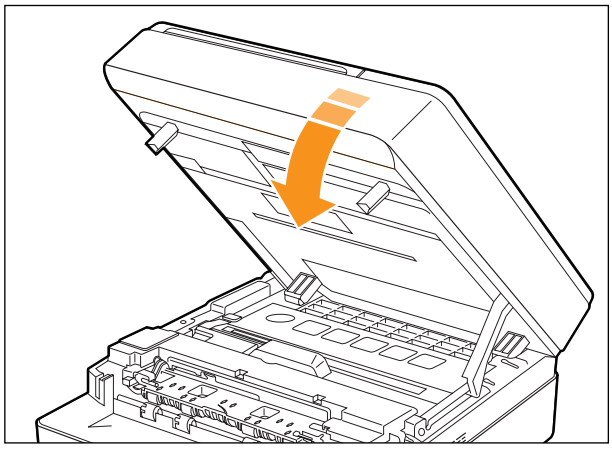
4. Align the tray with the slot, and slide it into the machine.



5. Press the top cover lever, completely open the top cover.

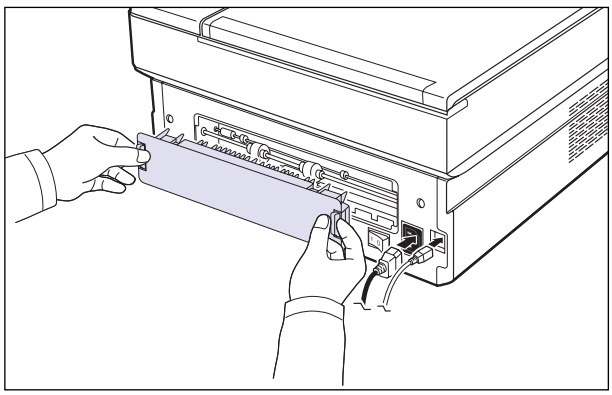


6. Hold the top cover and close it slowly and carefully, until the cover is securely latched.

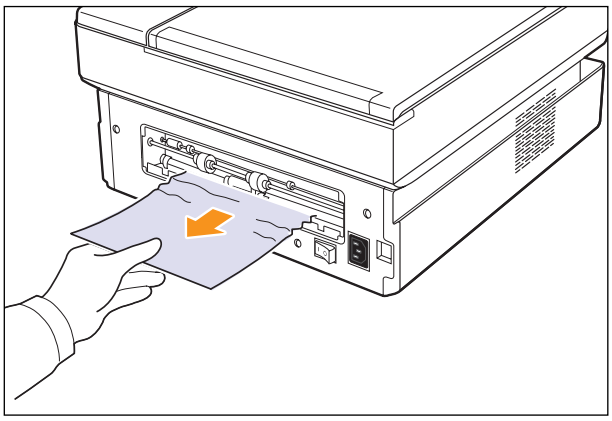


7. If the paper LED blinks, go to next step.

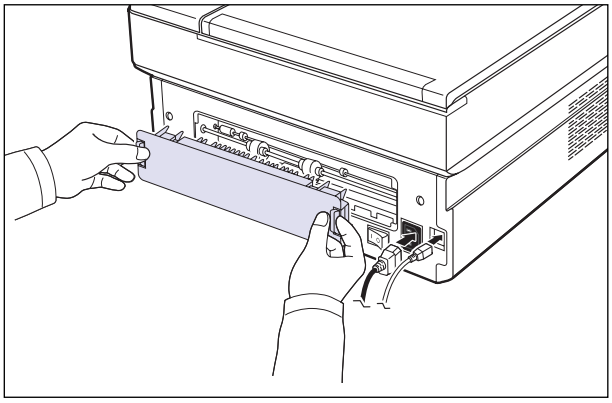
8. Open the rear cover.



9. Carefully take the jammed paper out of the machine.



10. Hold both edges of the rear cover, and align it as shown in the following figure. Press the rear cover firmly until it clicks.

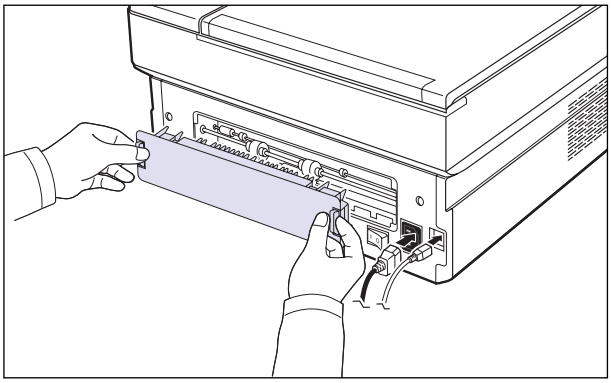


11. Open and close the top cover firmly. The machine will resume printing.

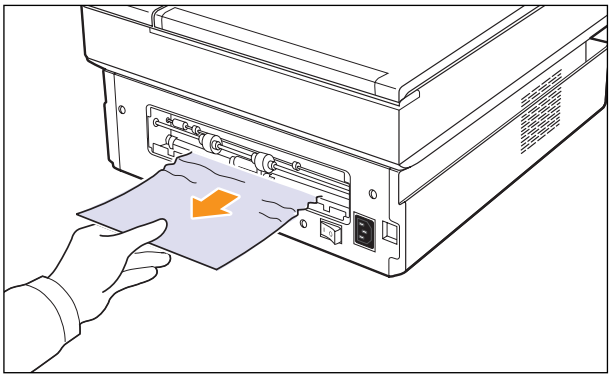
4.1.6.2(b) Rear and inside the machine

If paper is jammed in the rear and inside the machine, follow the next steps to release the jammed paper.

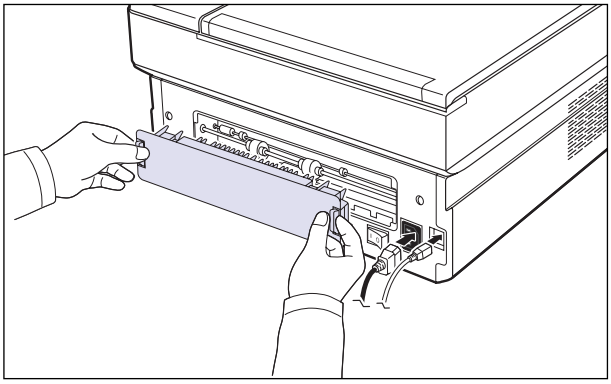
1. Open the rear cover.



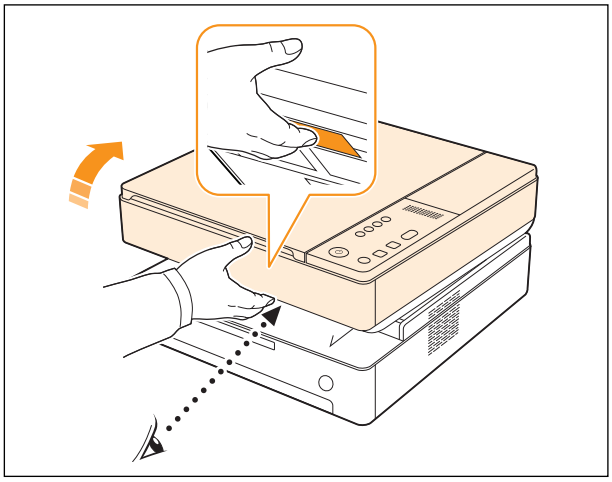
2. Carefully take the jammed paper out of the machine.



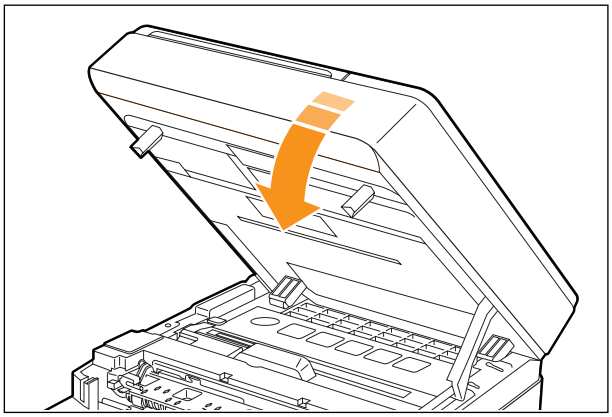
3. Hold both edges of the rear cover, and align it as shown in the following figure. Press the rear cover firmly until it clicks.



4. Press the top cover lever, completely open the top cover.



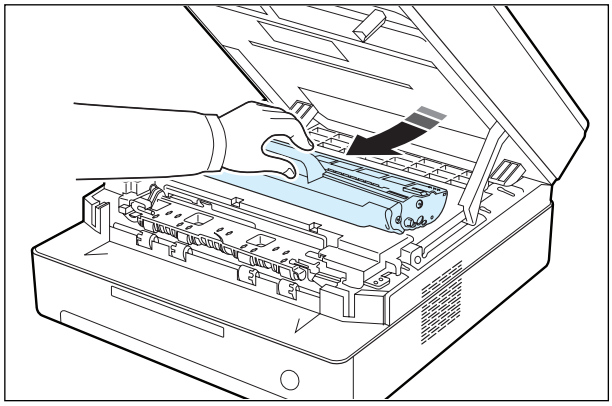
5. Hold the top cover and close it slowly and carefully, until the cover is securely latched.



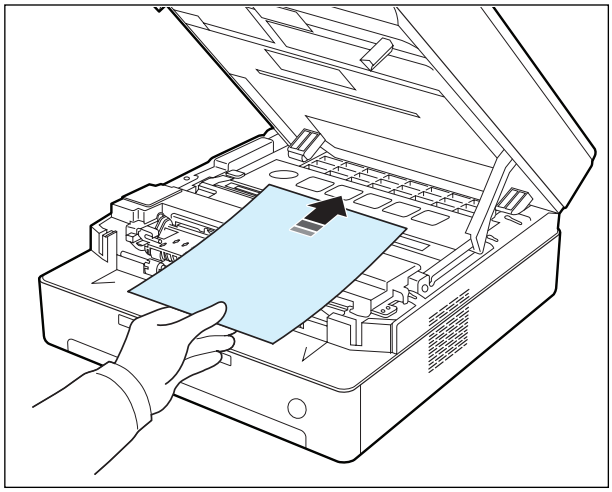
6. If the paper LED blinks, go to next step.

7. Press the top cover lever, completely open the top cover.

8. Grasp the handles on the print cartridge and pull to remove the cartridge out of the machine.

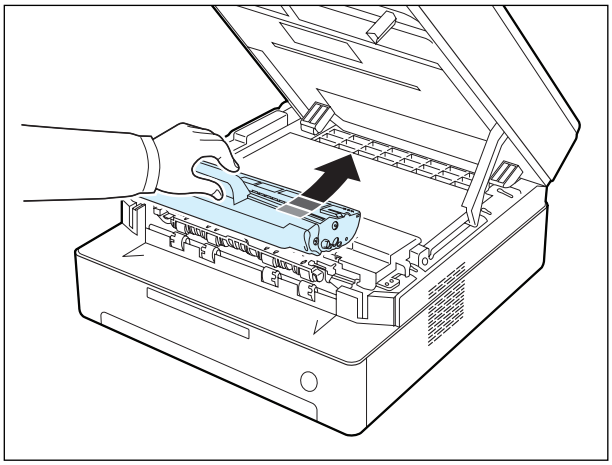


9. Carefully take the jammed paper out of the machine.



10. After removing the jammed paper, check for paper which may be jammed in other parts of the machine.

11. Slide the print cartridge back into the machine.

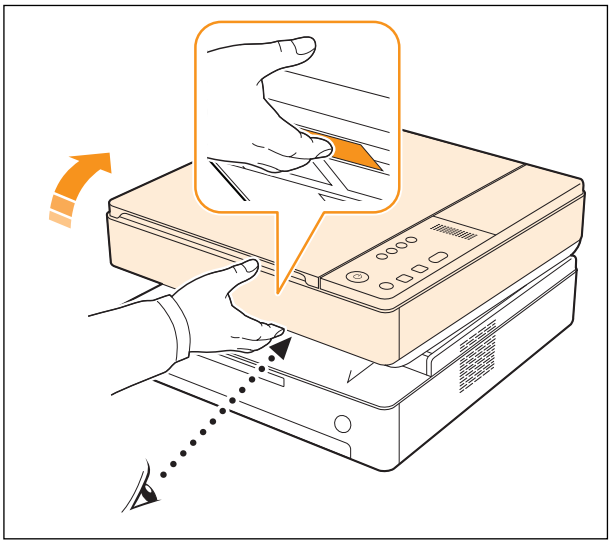


12. Close the top cover firmly. The machine will resume printing.

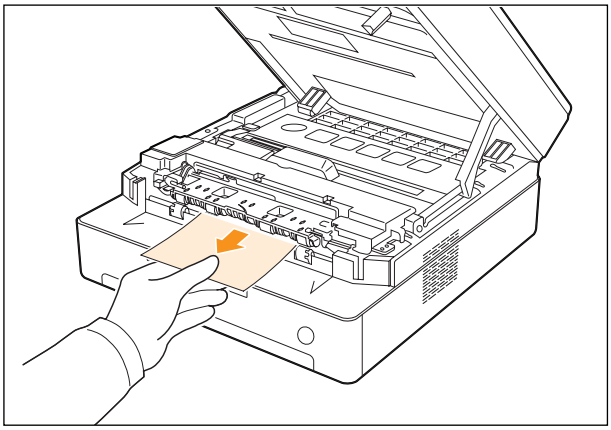
4.1.6.2(c) In the exit area

If paper is jammed in the paper exit area, follow the next steps to release the jammed paper.

1. Press the top cover lever, completely open the top cover.

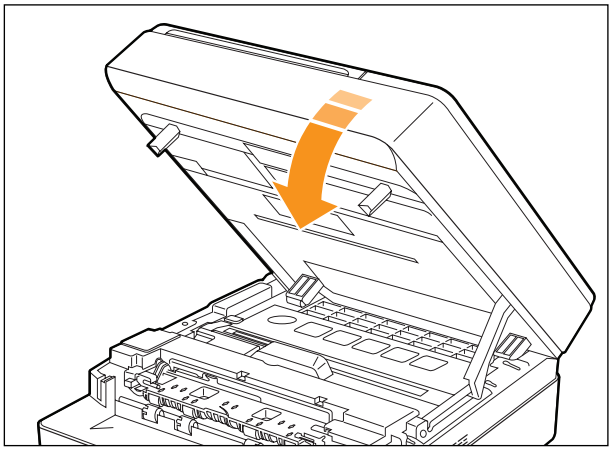


2. If a long portion of the paper is visible, pull it straight out.

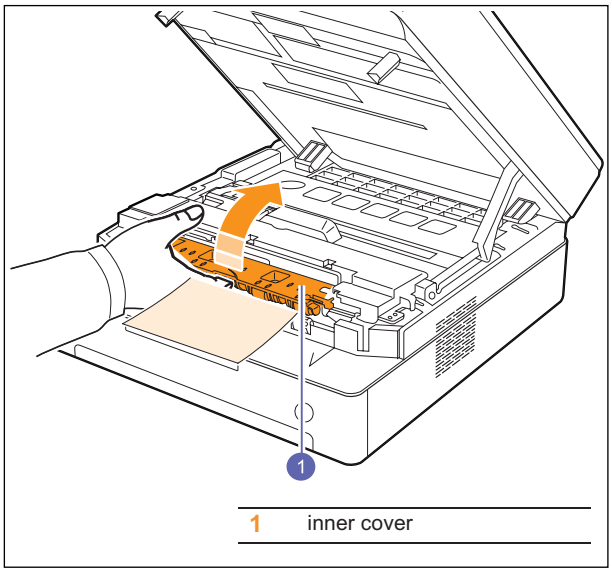


If there is any resistance removing the paper, stop pulling

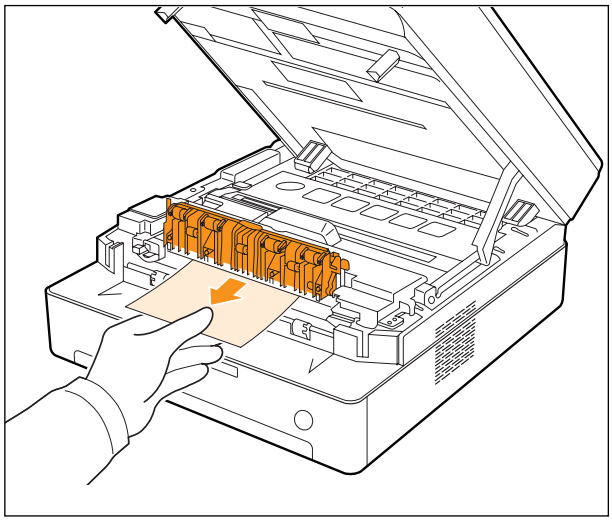
3. Hold the top cover and close it slowly and carefully, until the cover is securely latched.



4. Open the inner cover.



5. Carefully take the jammed paper out of the machine.



6. Close the inner cover.

7. After removing the jammed paper, check for paper which may be jammed in other parts of the machine.

8. Close the top cover firmly. The machine will resume printing.

4.1.7 Error Messages

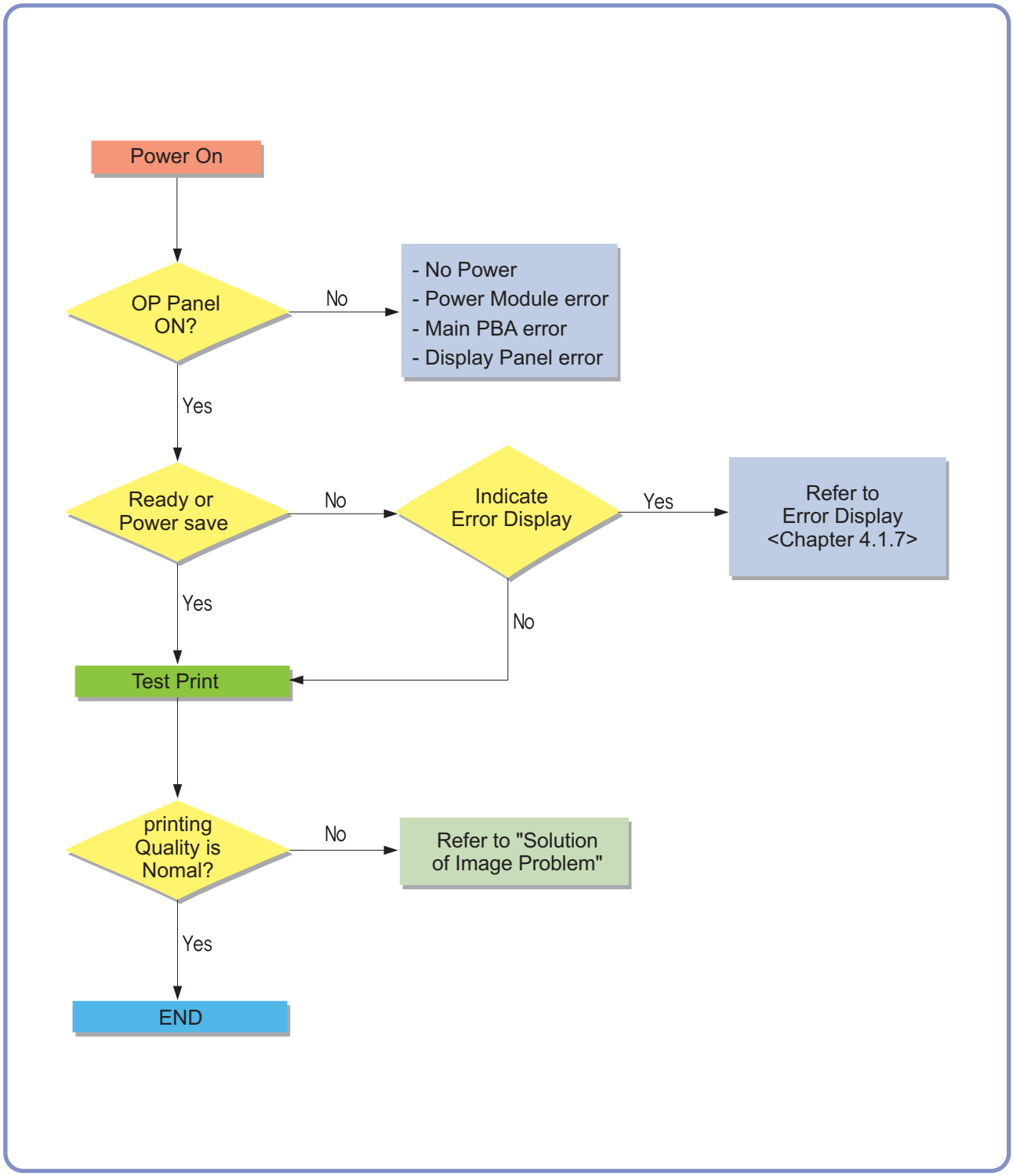
Messages appear on the Smart Panel program window or on the control panel display to indicate machine status or errors. Refer to the tables below to understand the messages meaning to correct the problem, if necessary.

Message	Meaning	Suggested solutions
OPEN	The covers is not completely closed.	Press the covers until it clicks.
!! EE	There is a problem in the machine.	Unplug the power cord and plug it back in. If the problem persists, contact the service representatives.
LED blinks	There is no paper in the tray.	Load paper in the tray.
LED blinks	In the paper feed area and rear the machine.	Clear the jam.
	Rear and Inside the machine.	Clear the jam.
	In the exit area.	Clear the jam.
LED blinks slowly	The print cartridge which the arrow indicates is almost empty.	Take out the corresponding print cartridge and thoroughly shake it. By doing this, you can temporarily reestablish printing operations.
LED blinks rapidly	The print cartridge which the arrow indicates has run out.	Replace the corresponding print cartridge with a Samsung-genuine cartridge.
LED blinks rapidly	The print cartridge is installed improperly, or not installed.	Reinstall the print cartridge two or three times. If the problem persists, the print cartridge is not being detected. Please contact the service representatives.
!! T1	The print cartridge you have installed is not compatible with your machine.	Replace the corresponding cartridge with a Samsung-genuine cartridge.
!! T2	The lifespan of cartridge is reached.	Replace the corresponding cartridge with a Samsung-genuine cartridge.
!! T3	The print cartridge you have installed is not a genuine cartridge.	Replace the corresponding cartridge with a Samsung-genuine cartridge.

4.2 Troubleshooting

4.2.1 Procedure of Checkig the Symptoms

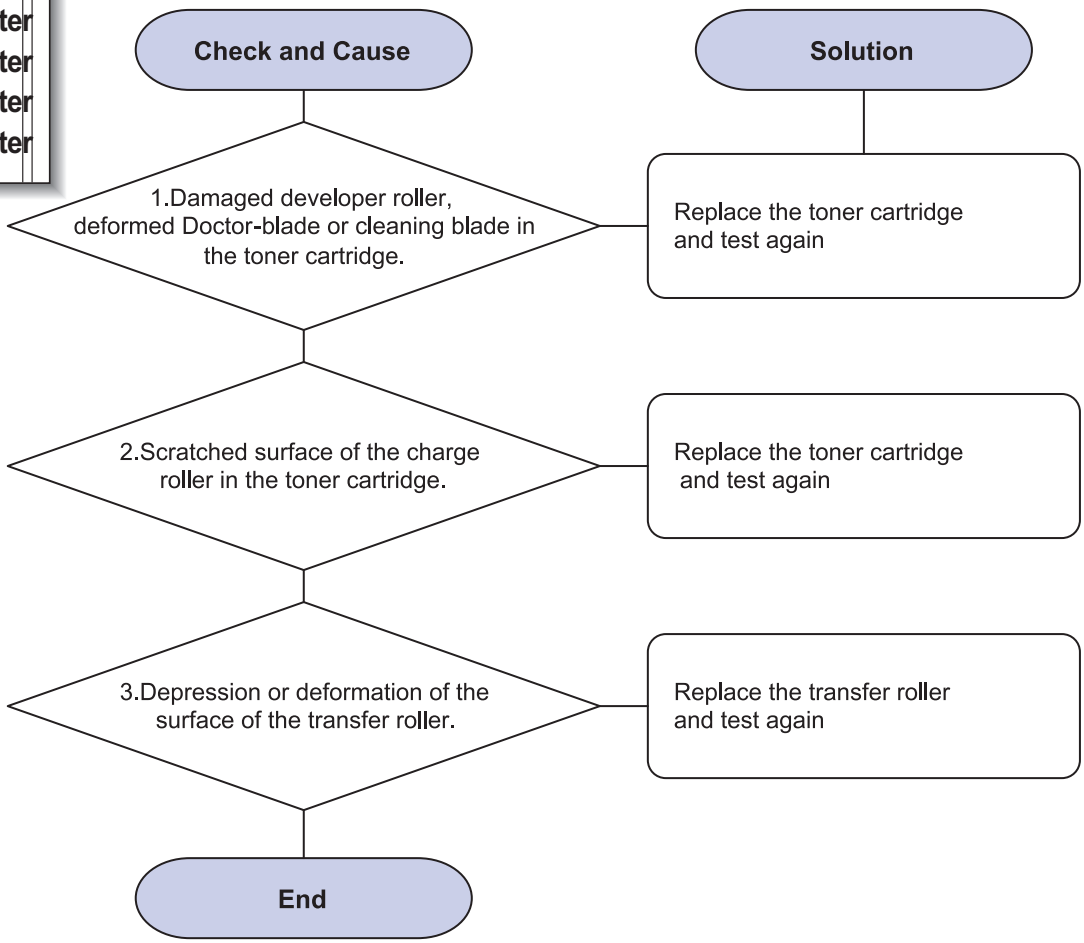
Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



4.2.2 The cause and solution of image quality

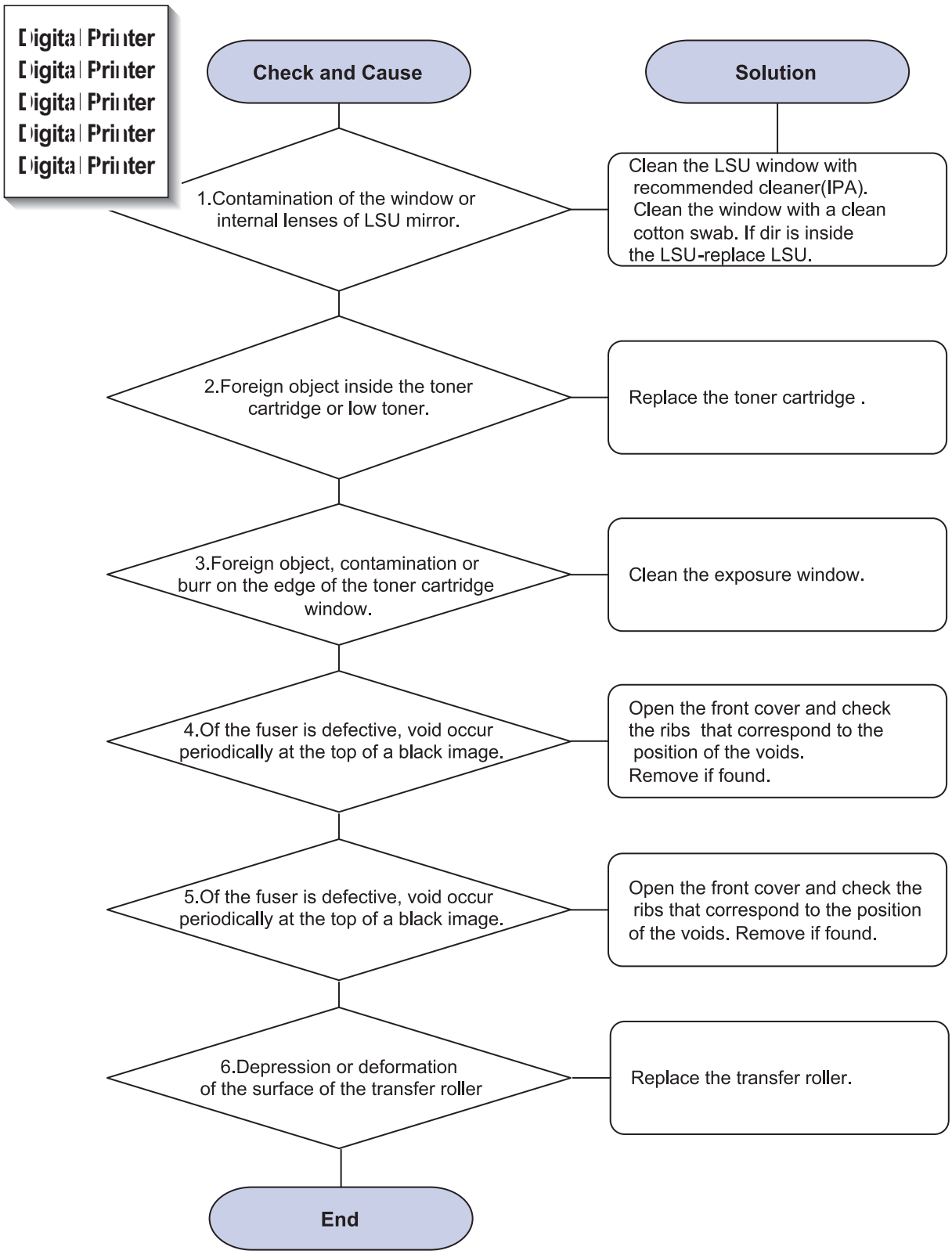
4.2.2.1 Vertical Black Line and Band

Description: 1. Straight thin black vertical lines occur in the prnting
2. Dark black vertical bands occurrs in the printing


Check and Cause
Solution
1.Damaged developer roller, deformed Doctor-blade or cleaning blade in the toner cartridge.
Replace the toner cartridge and test again
2.Scratched surface of the charge roller in the toner cartridge.
Replace the toner cartridge and test again
3.Depression or deformation of the surface of the transfer roller.
Replace the transfer roller and test again
End

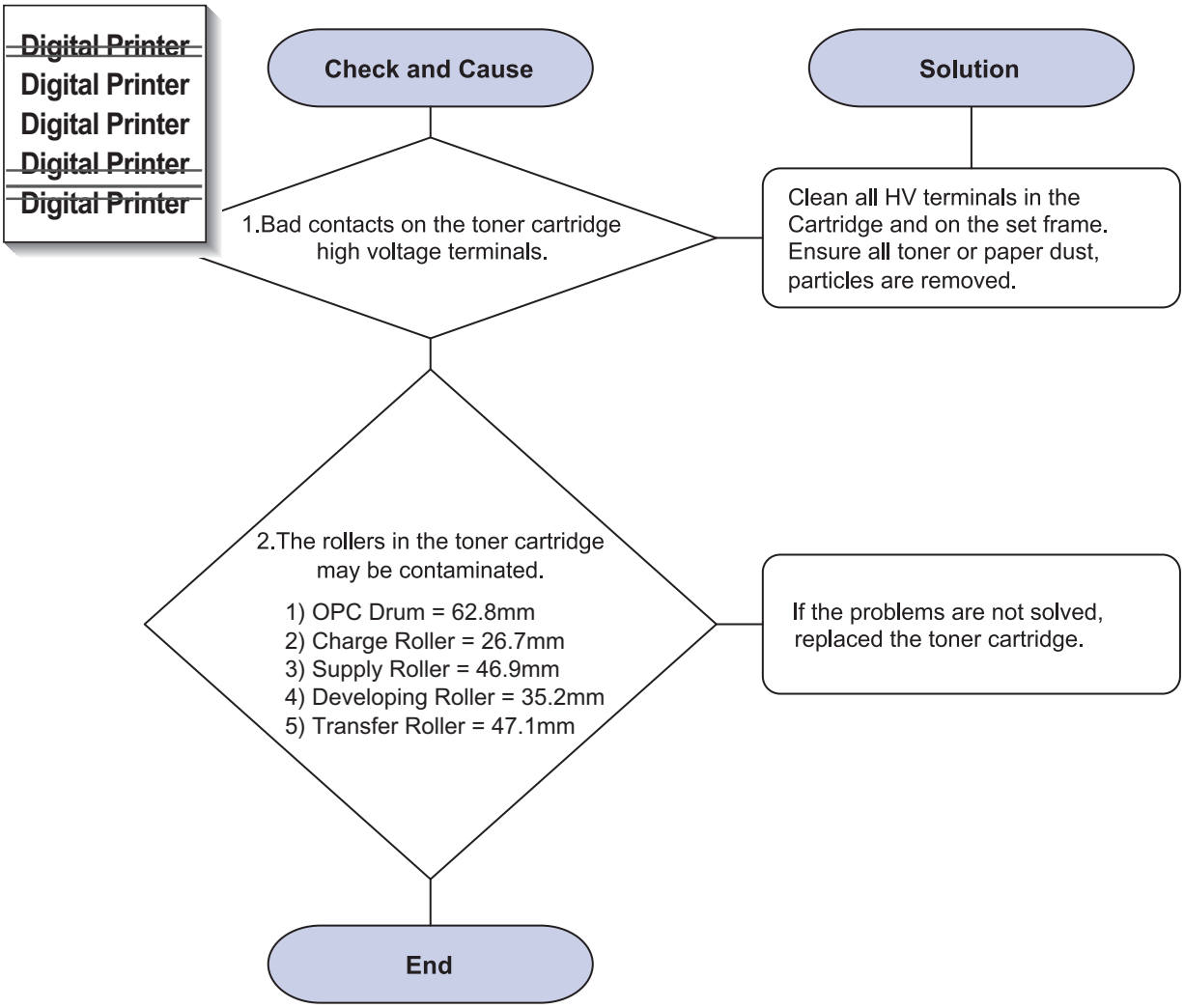
4.2.2.2 Vertical White Line

Description: White vertical voids in the image.


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.Contamination of the window or internal lenses of LSU mirror.
Clean the LSU window with recommended cleaner(IPA). Clean the window with a clean cotton swab. If dir is inside the LSU-replace LSU.
2.Foreign object inside the toner cartridge or low toner.
Replace the toner cartridge .
3.Foreign object, contamination or burr on the edge of the toner cartridge window.
Clean the exposure window.
4.Of the fuser is defective, void occur periodically at the top of a black image.
Open the front cover and check the ribs that correspond to the position of the voids. Remove if found.
5.Of the fuser is defective, void occur periodically at the top of a black image.
Open the front cover and check the ribs that correspond to the position of the voids. Remove if found.
6.Depression or deformation of the surface of the transfer roller
Replace the transfer roller.
End

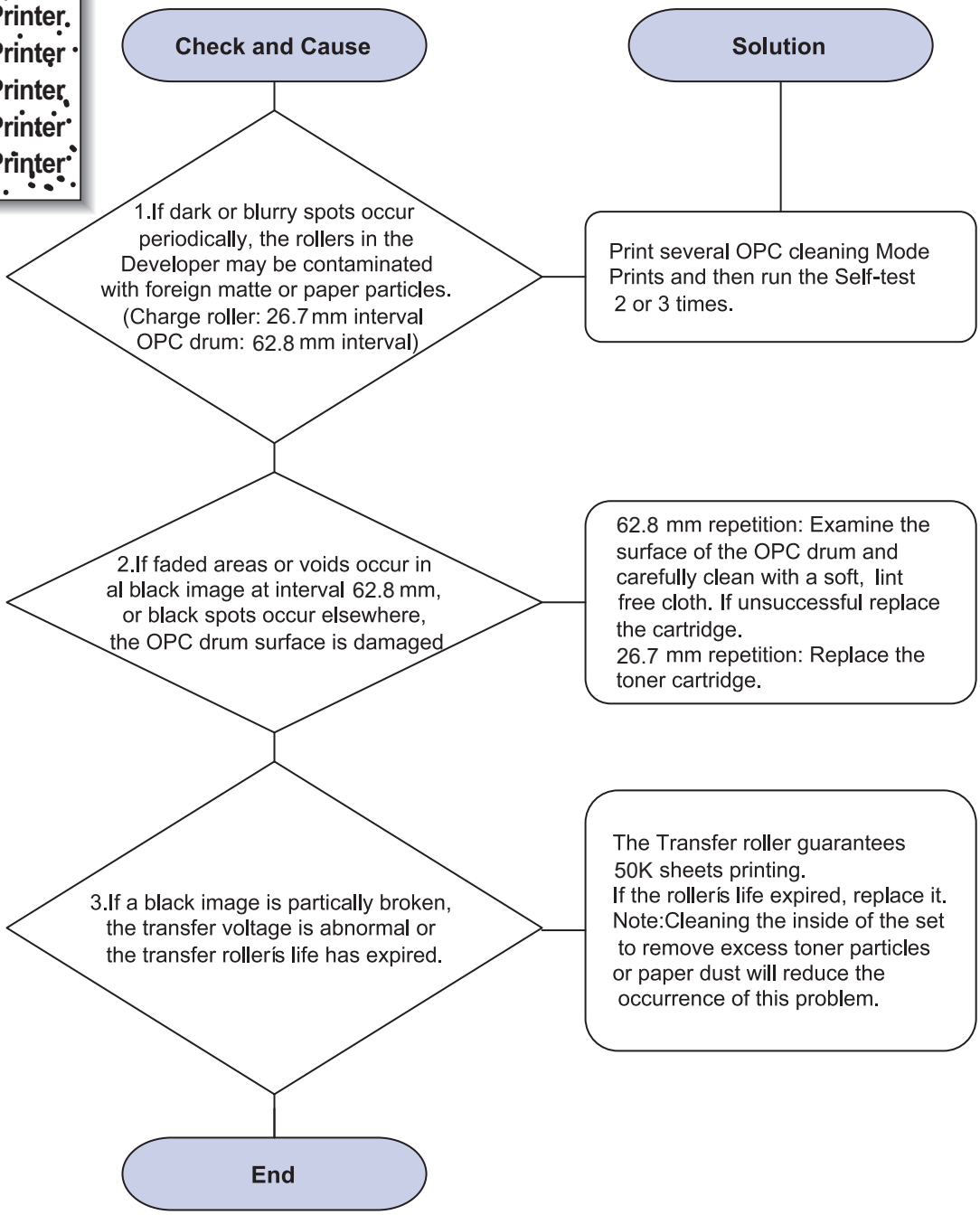
4.2.2.3 Horizontal Black Bands

Description: Dark or blurry horizontal stripes occur in the printing periodically
(These may occurs at regular intervals down the page.)


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.Bad contacts on the toner cartridge high voltage terminals.
Clean all HV terminals in the Cartridge and on the set frame. Ensure all toner or paper dust, particles are removed.
2.The rollers in the toner cartridge may be contaminated.
1) OPC Drum = 62.8mm
2) Charge Roller = 26.7mm
3) Supply Roller = 46.9mm
4) Developing Roller = 35.2mm
5) Transfer Roller = 47.1mm
If the problems are not solved, replaced the toner cartridge.
End

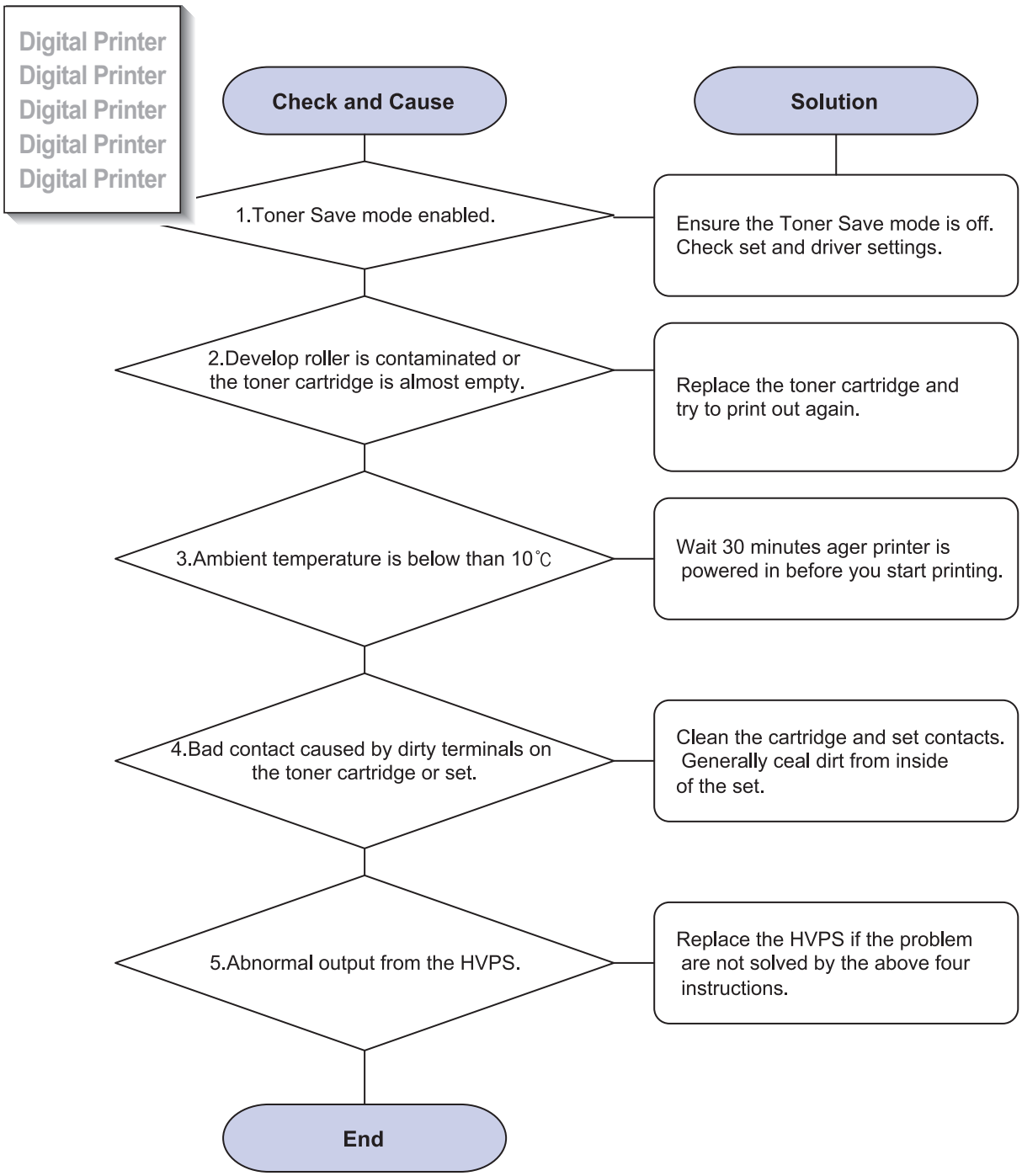
4.2.2.4 Black/White Spot

Description: 1. Dark or blurry spots occur periodically in the printing
2. White spots occur periodically in the printing


Check and Cause
Solution
1.If dark or blurry spots occur periodically, the rollers in the Developer may be contaminated with foreign matte or paper particles. (Charge roller: 26.7 mm interval OPC drum: 62.8 mm interval)
Print several OPC cleaning Mode Prints and then run the Self-test 2 or 3 times.
2.If faded areas or voids occur in al black image at interval 62.8 mm, or black spots occur elsewhere, the OPC drum surface is damaged
62.8 mm repetition: Examine the surface of the OPC drum and carefully clean with a soft, lint free cloth. If unsuccessful replace the cartridge.
26.7 mm repetition: Replace the toner cartridge.
3.If a black image is partically broken, the transfer voltage is abnormal or the transfer rollerís life has expired.
The Transfer roller guarantees 50K sheets printing.
If the rollerís life expired, replace it.
Note:Cleaning the inside of the set to remove excess toner particles or paper dust will reduce the occurrence of this problem.
End

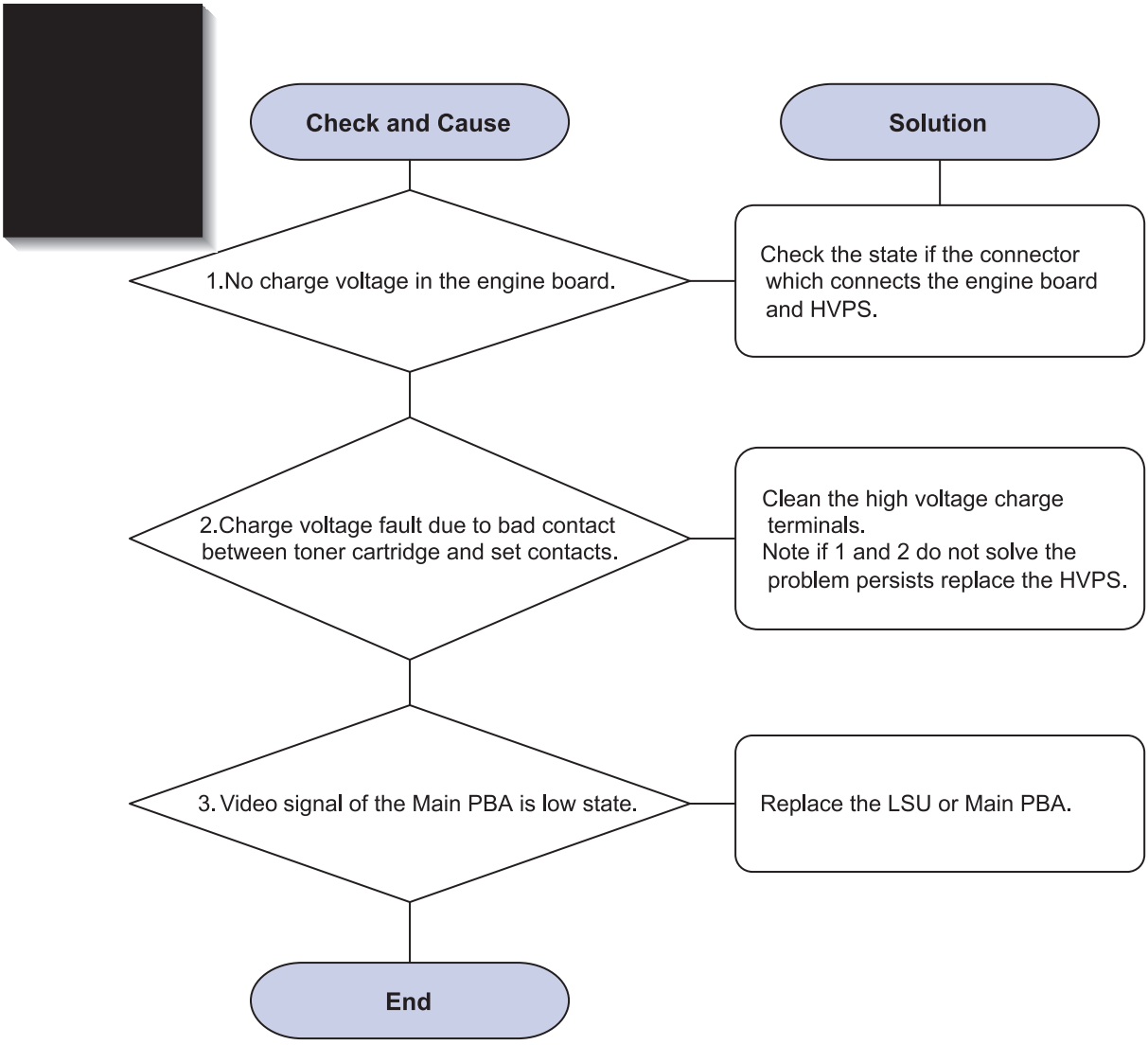
4.2.2.5 Light Image

Description: The printed image is light, with no ghost.


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.Toner Save mode enabled.
Ensure the Toner Save mode is off.
Check set and driver settings.
2.Develop roller is contaminated or
the toner cartridge is almost empty.
Replace the toner cartridge and
try to print out again.
3.Ambient temperature is below than 10℃
Wait 30 minutes ager printer is
powered in before you start printing.
4.Bad contact caused by dirty terminals on
the toner cartridge or set.
Clean the cartridge and set contacts.
Generally ceal dirt from inside
of the set.
5.Abnormal output from the HVPS.
Replace the HVPS if the problem
are not solved by the above four
instructions.
End

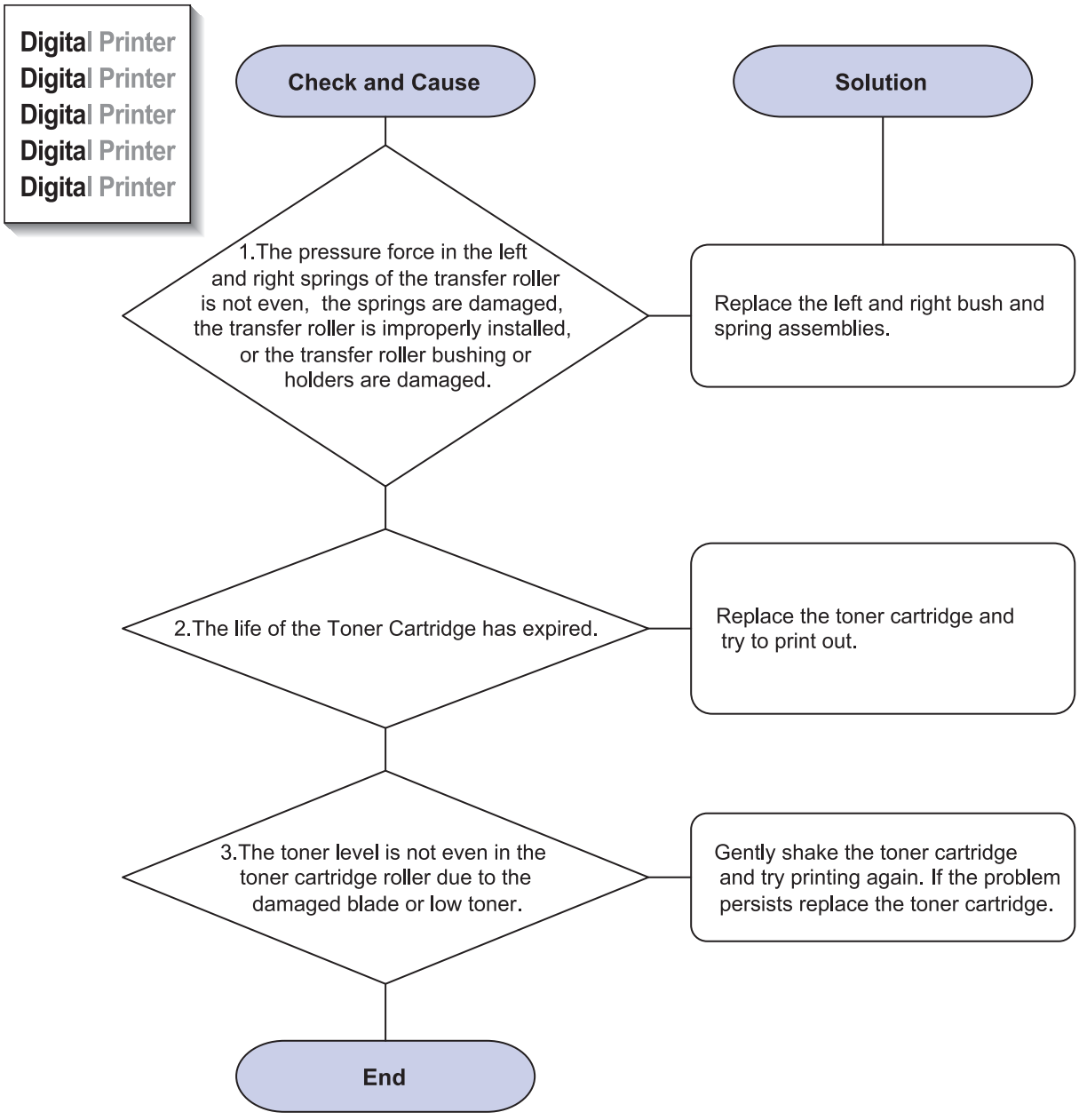
4.2.2.6 Dark image or Black

Description: The printed image is dark.


Check and Cause
Solution
1.No charge voltage in the engine board.
Check the state if the connector which connects the engine board and HVPS.
2.Charge voltage fault due to bad contact between toner cartridge and set contacts.
Clean the high voltage charge terminals.
Note if 1 and 2 do not solve the problem persists replace the HVPS.
3. Video signal of the Main PBA is low state.
Replace the LSU or Main PBA.
End

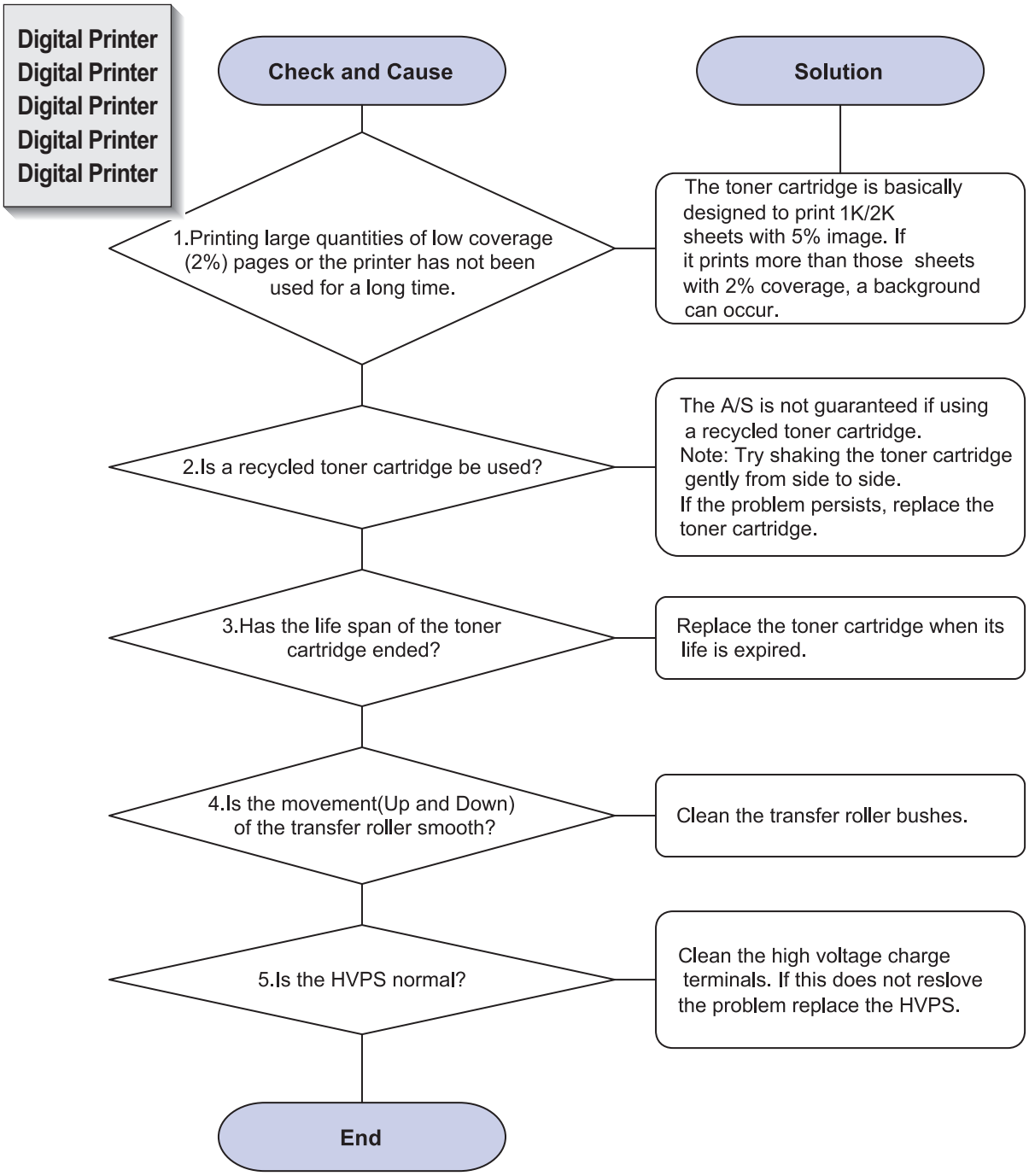
4.2.2.7 Uneven Density

Description: Print Density is uneven between left and right.


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.The pressure force in the left and right springs of the transfer roller is not even, the springs are damaged, the transfer roller is improperly installed, or the transfer roller bushing or holders are damaged.
Replace the left and right bush and spring assemblies.
2.The life of the Toner Cartridge has expired.
Replace the toner cartridge and try to print out.
3.The toner level is not even in the toner cartridge roller due to the damaged blade or low toner.
Gently shake the toner cartridge and try printing again. If the problem persists replace the toner cartridge.
End

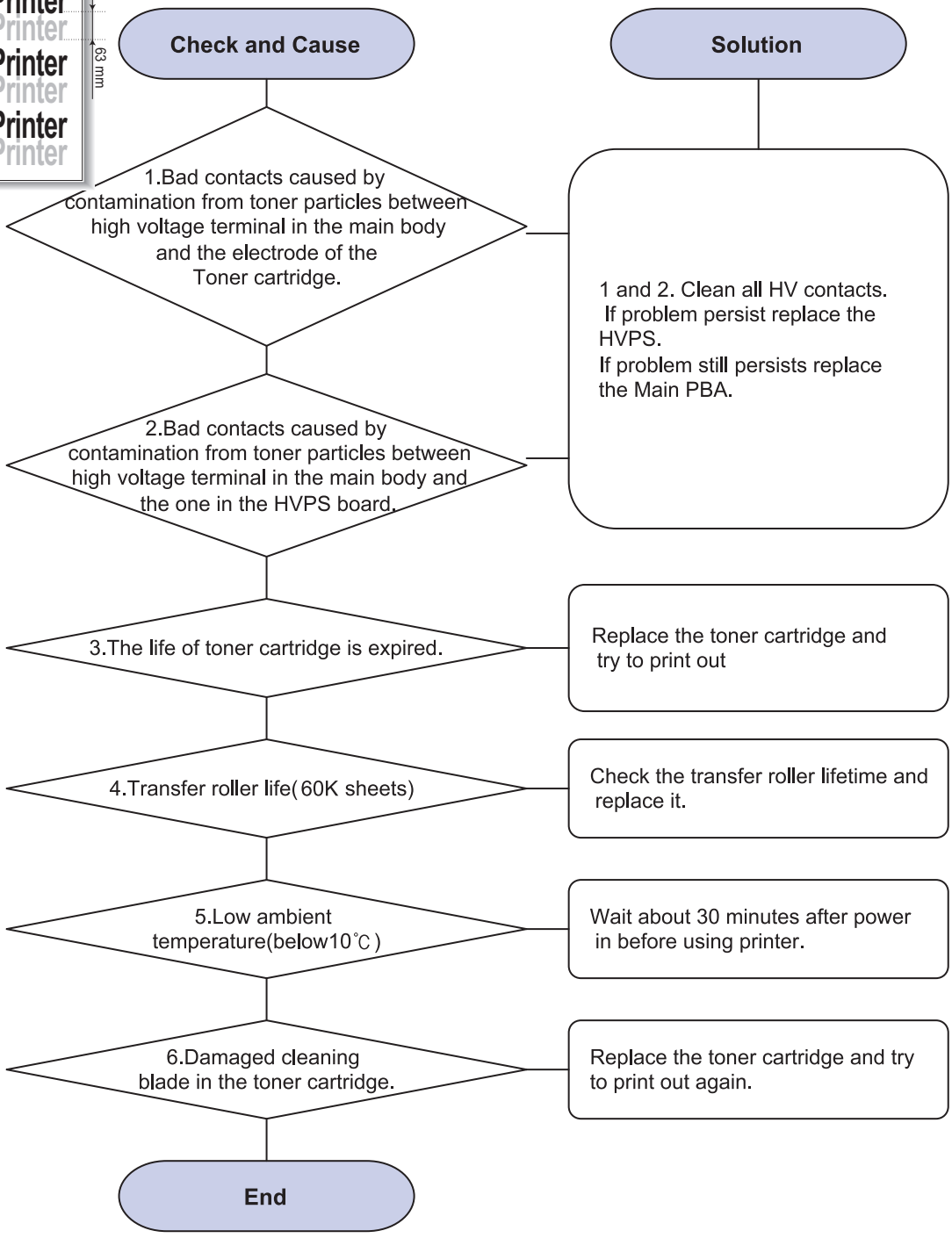
4.2.2.8 Background

Description:Light dark background appears in whole area of the printing.


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.Printing large quantities of low coverage (2%) pages or the printer has not been used for a long time.
The toner cartridge is basically designed to print 1K/2K sheets with 5% image. If it prints more than those sheets with 2% coverage, a background can occur.
2.Is a recycled toner cartridge be used?
The A/S is not guaranteed if using a recycled toner cartridge.
Note: Try shaking the toner cartridge gently from side to side.
If the problem persists, replace the toner cartridge.
3.Has the life span of the toner cartridge ended?
Replace the toner cartridge when its life is expired.
4.Is the movement(Up and Down) of the transfer roller smooth?
Clean the transfer roller bushes.
5.Is the HVPS normal?
Clean the high voltage charge terminals. If this does not reslove the problem replace the HVPS.
End

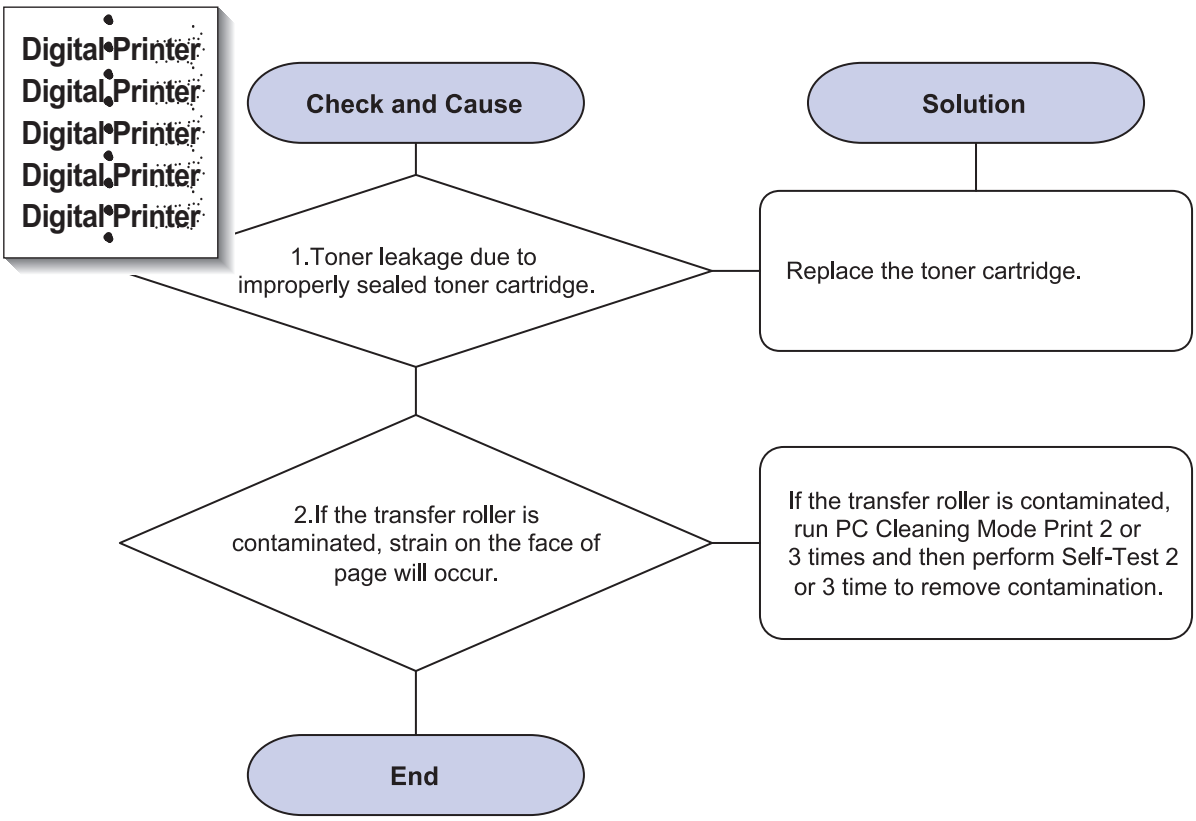
4.2.2.9 Ghost(1)

Description: Ghost occur at 63mm intervals of the OPC drum in the whole Printing


Check and Cause
Solution
1.Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the electrode of the Toner cartridge.
2.Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the one in the HVPS board.
1 and 2. Clean all HV contacts. If problem persist replace the HVPS. If problem still persists replace the Main PBA.
3.The life of toner cartridge is expired.
Replace the toner cartridge and try to print out
4.Transfer roller life(60K sheets)
Check the transfer roller lifetime and replace it.
5.Low ambient temperature(below10℃)
Wait about 30 minutes after power in before using printer.
6.Damaged cleaning blade in the toner cartridge.
Replace the toner cartridge and try to print out again.
End

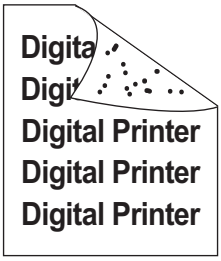
4.2.2.10 Strain in the Face of the Page

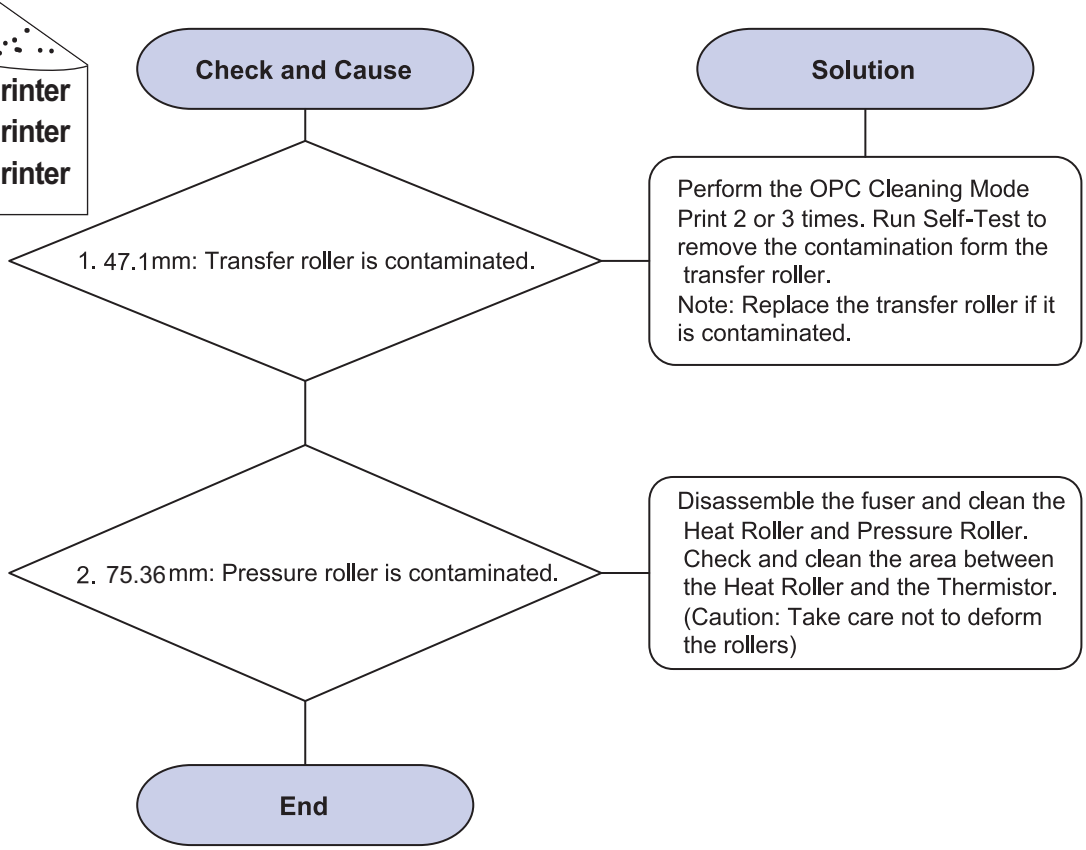
Description: The background on the face of the printed page strained.


Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer
Check and Cause
Solution
1.Toner leakage due to improperly sealed toner cartridge.
Replace the toner cartridge.
2.If the transfer roller is contaminated, strain on the face of page will occur.
If the transfer roller is contaminated, run PC Cleaning Mode Print 2 or 3 times and then perform Self-Test 2 or 3 time to remove contamination.
End

4.2.2.11 Strains on Back of Page

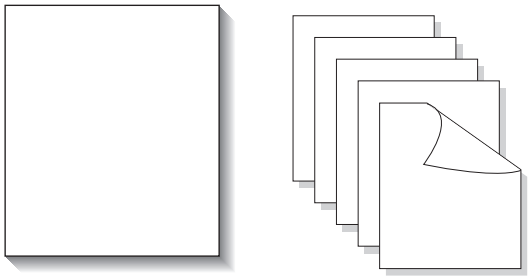
Description: The back of the page is strained at 47.1 or 75.36 mm intervals.

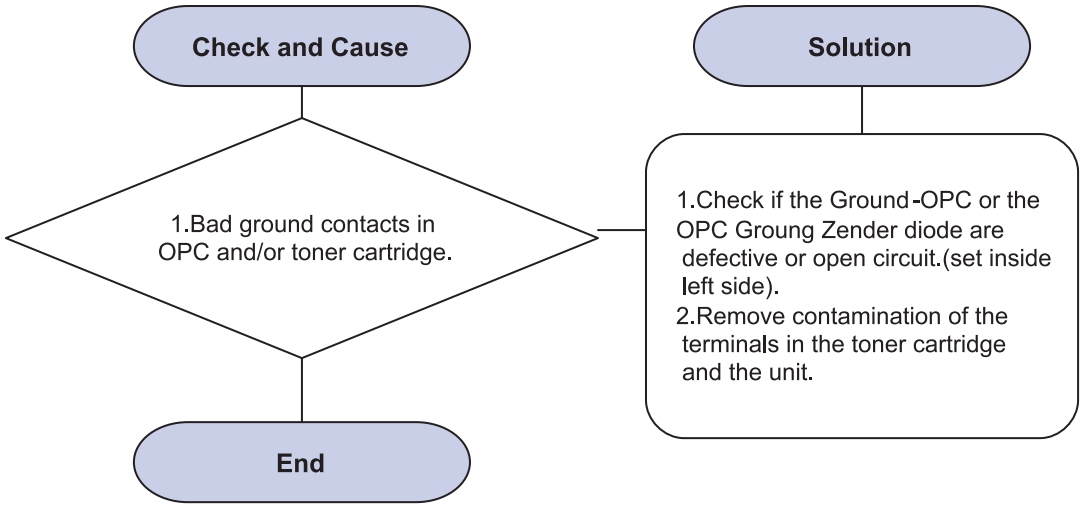



Check and Cause
Solution
1. 47.1mm: Transfer roller is contaminated.
Perform the OPC Cleaning Mode Print 2 or 3 times. Run Self-Test to remove the contamination form the transfer roller.
Note: Replace the transfer roller if it is contaminated.
2. 75.36mm: Pressure roller is contaminated.
Disassemble the fuser and clean the Heat Roller and Pressure Roller. Check and clean the area between the Heat Roller and the Thermistor. (Caution: Take care not to deform the rollers)
End

4.2.2.12 Blank Page Print out(1)

Description: Blank page is printed.

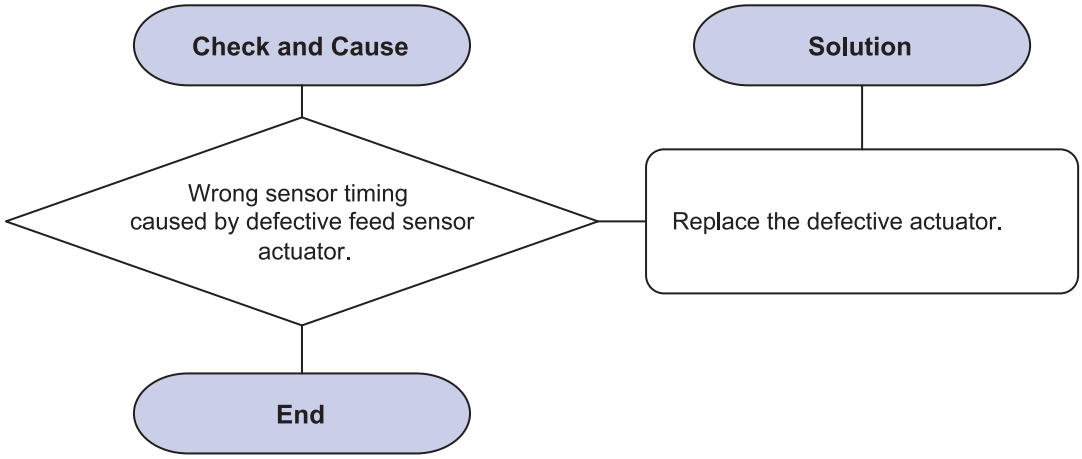



Check and Cause
Solution
1.Bad ground contacts in OPC and/or toner cartridge.
1.Check if the Ground-OPC or the OPC Groung Zender diode are defective or open circuit.(set inside left side).
2.Remove contamination of the terminals in the toner cartridge and the unit.
End

4.2.3 The cause and solution of the paper feeding

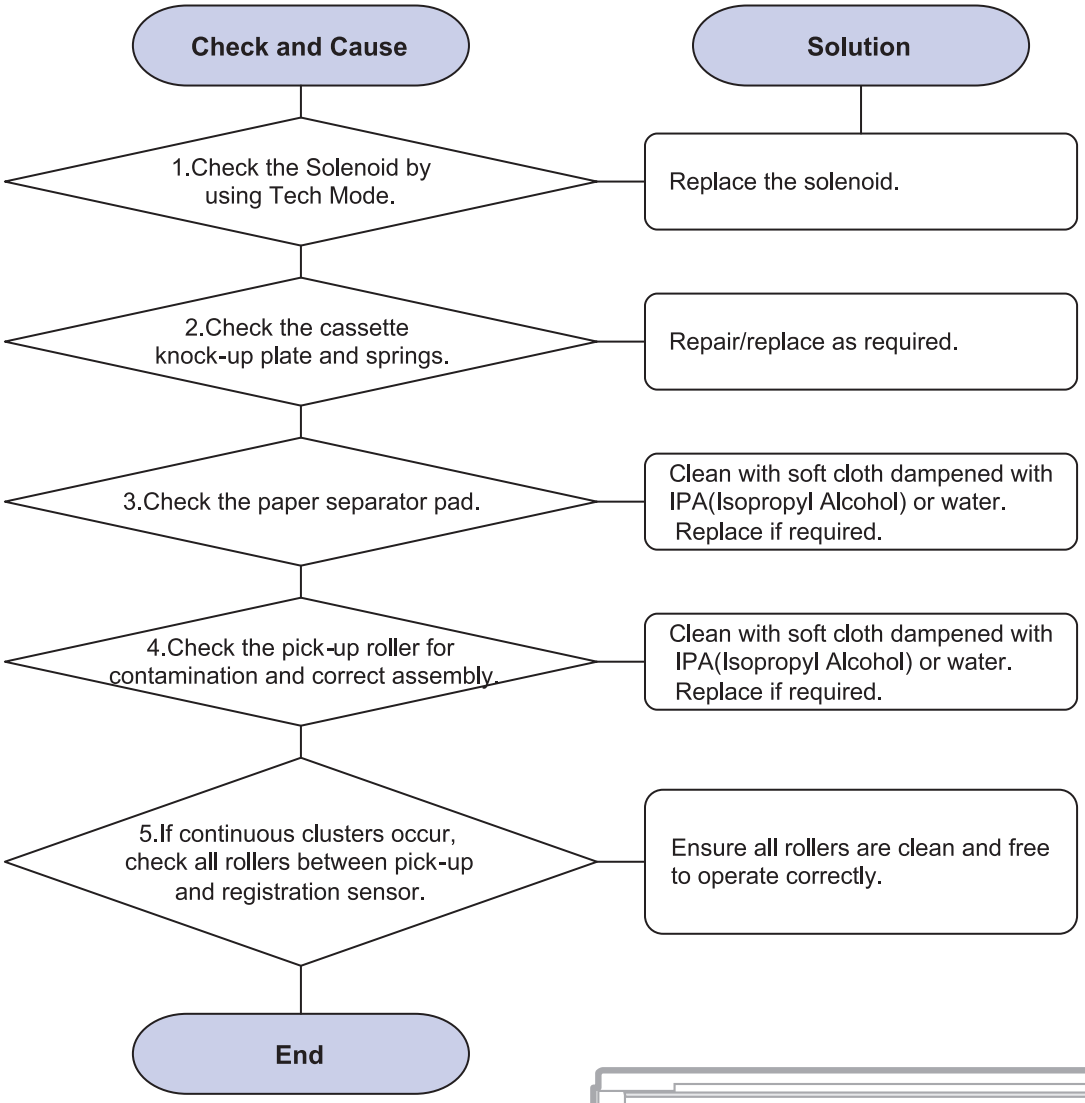
4.2.3.1 Wrong Print Position

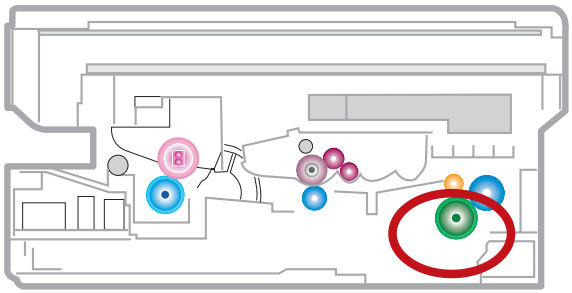
Description: Printing begins at wrong position on the paper.



4.2.3.2 JAM 0

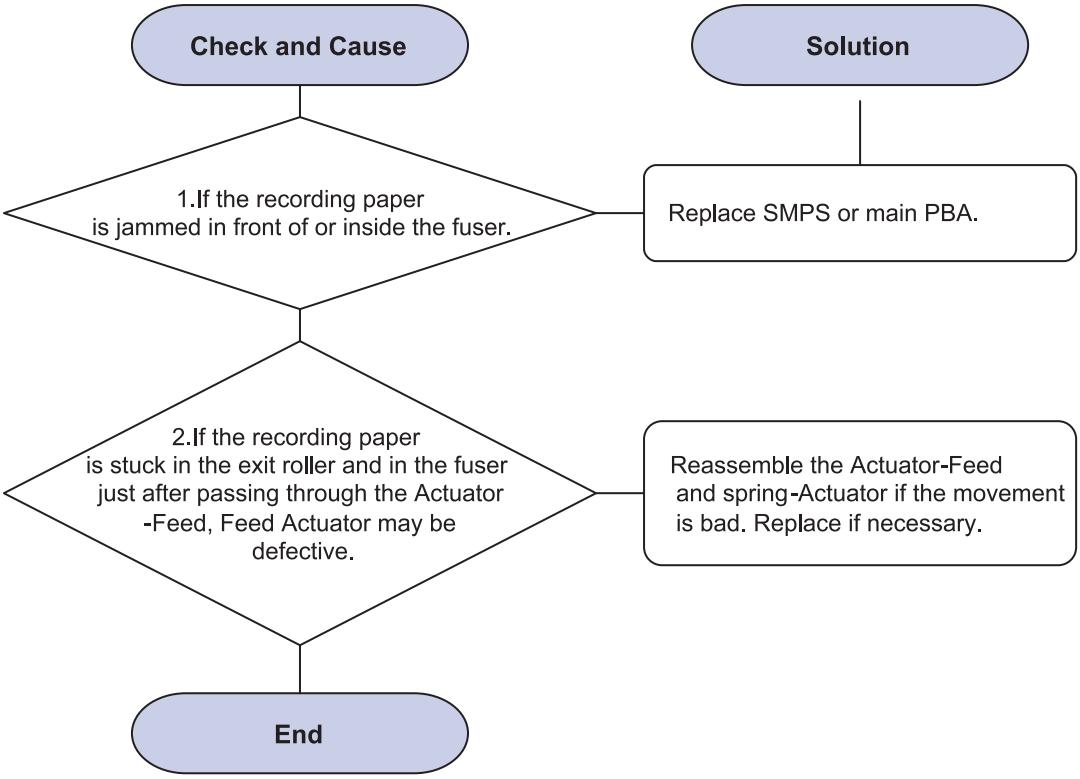
Description: 1. Paper does not exit from the cassette.
2. Jam-0 occurs when the paper feeds into the printer

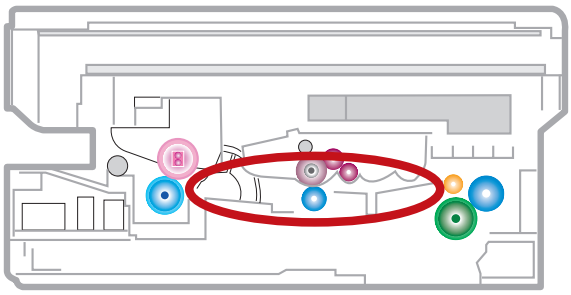

Check and Cause
Solution
1.Check the Solenoid by using Tech Mode.
Replace the solenoid.
2.Check the cassette knock-up plate and springs.
Repair/replace as required.
3.Check the paper separator pad.
Clean with soft cloth dampened with IPA(Isopropyl Alcohol) or water. Replace if required.
4.Check the pick-up roller for contamination and correct assembly.
Clean with soft cloth dampened with IPA(Isopropyl Alcohol) or water. Replace if required.
5.If continuous clusters occur, check all rollers between pick-up and registration sensor.
Ensure all rollers are clean and free to operate correctly.
End



4.2.3.3 JAM 1

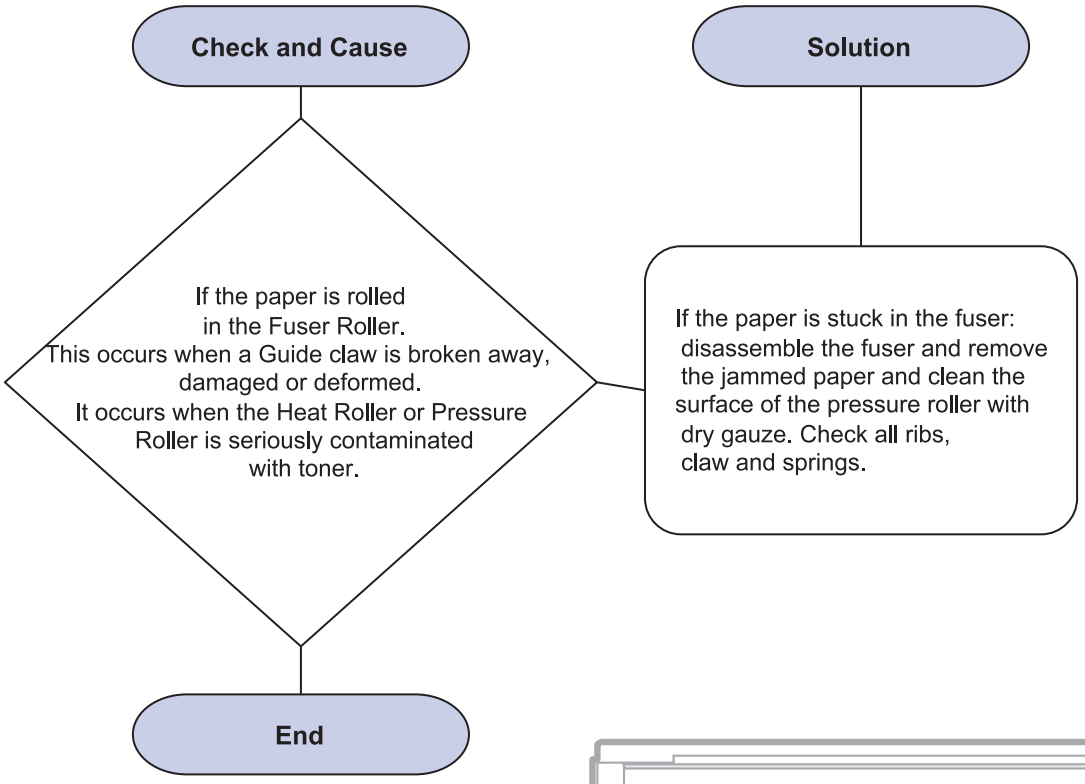
Description: 1. Paper is jammed in front of or inside the fuser.
2. Paper is stuck in the exit roller and in the fuser just after passing through the Actuator-Feed

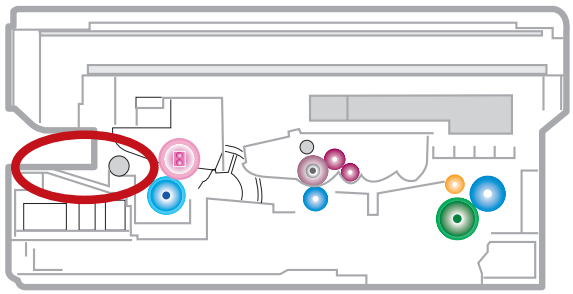

Check and Cause
Solution
1.If the recording paper is jammed in front of or inside the fuser.
Replace SMPS or main PBA.
2.If the recording paper is stuck in the exit roller and in the fuser just after passing through the Actuator -Feed, Feed Actuator may be defective.
Reassemble the Actuator-Feed and spring-Actuator if the movement is bad. Replace if necessary.
End



4.2.3.4 JAM 2

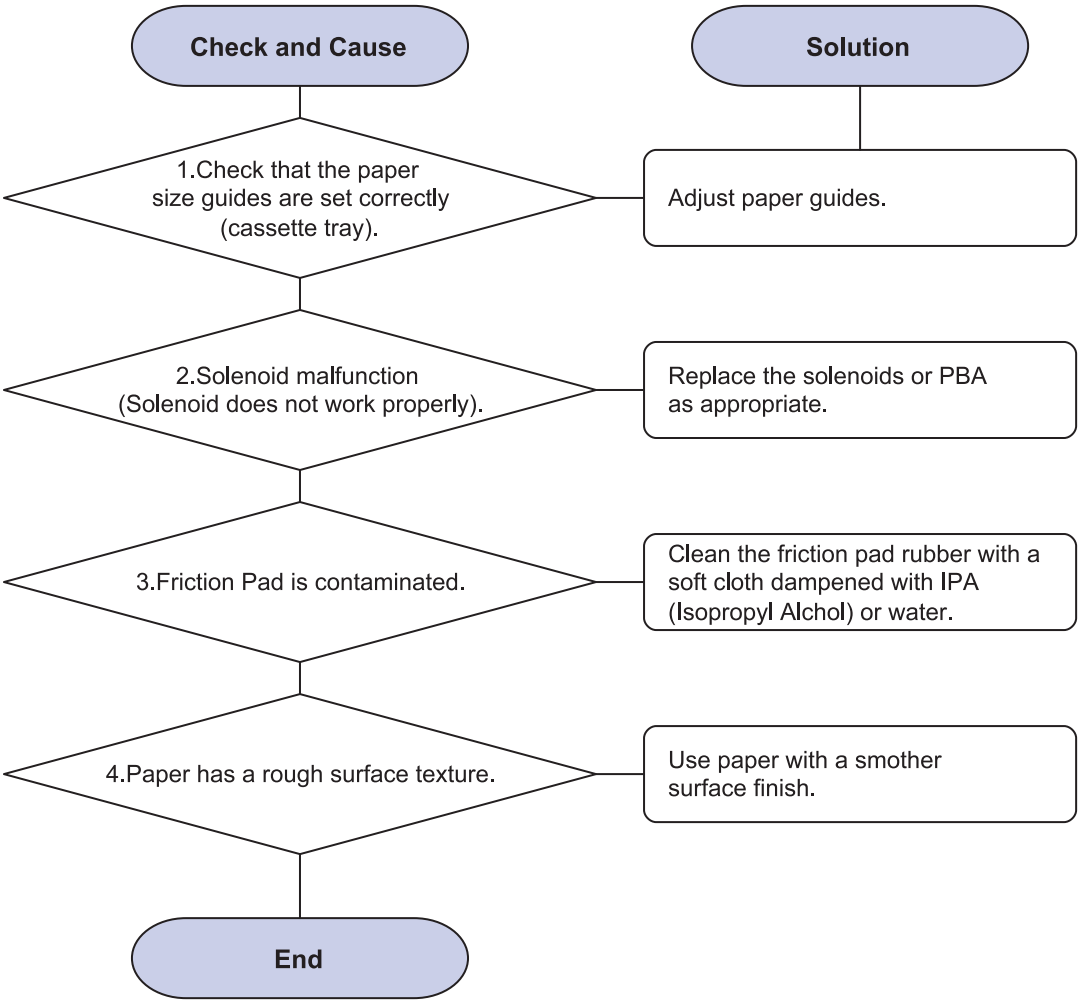
Description: 1. Recording paper is jammed in front of or inside the fuser.
2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.


Check and Cause
Solution
If the paper is rolled in the Fuser Roller. This occurs when a Guide claw is broken away, damaged or deformed. It occurs when the Heat Roller or Pressure Roller is seriously contaminated with toner.
If the paper is stuck in the fuser: disassemble the fuser and remove the jammed paper and clean the surface of the pressure roller with dry gauze. Check all ribs, claw and springs.
End



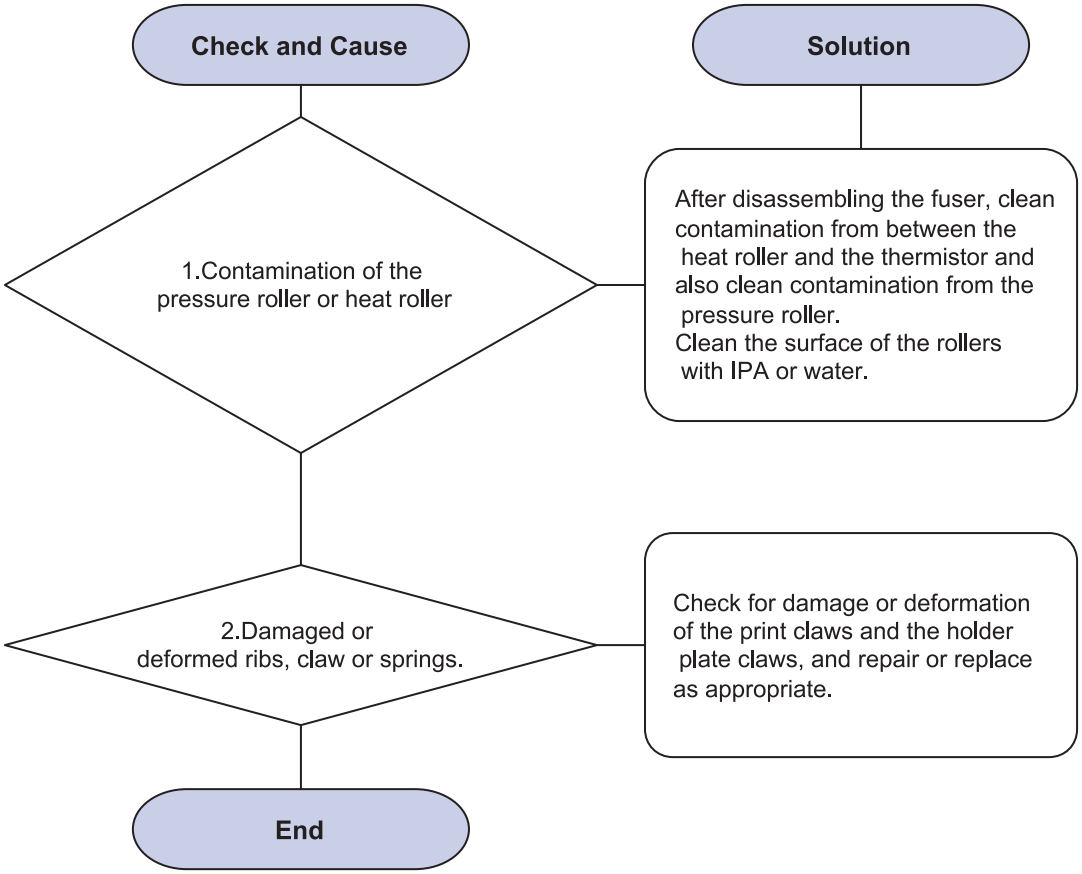
4.2.3.5 Multi-Feeding

Description: Multiple sheets of paper are fed at once.


Check and Cause
Solution
1.Check that the paper size guides are set correctly (cassette tray).
Adjust paper guides.
2.Solenoid malfunction (Solenoid does not work properly).
Replace the solenoids or PBA as appropriate.
3.Friction Pad is contaminated.
Clean the friction pad rubber with a soft cloth dampened with IPA (Isopropyl Alchol) or water.
4.Paper has a rough surface texture.
Use paper with a smother surface finish.
End

4.2.3.6 Paper rolled in the fuser

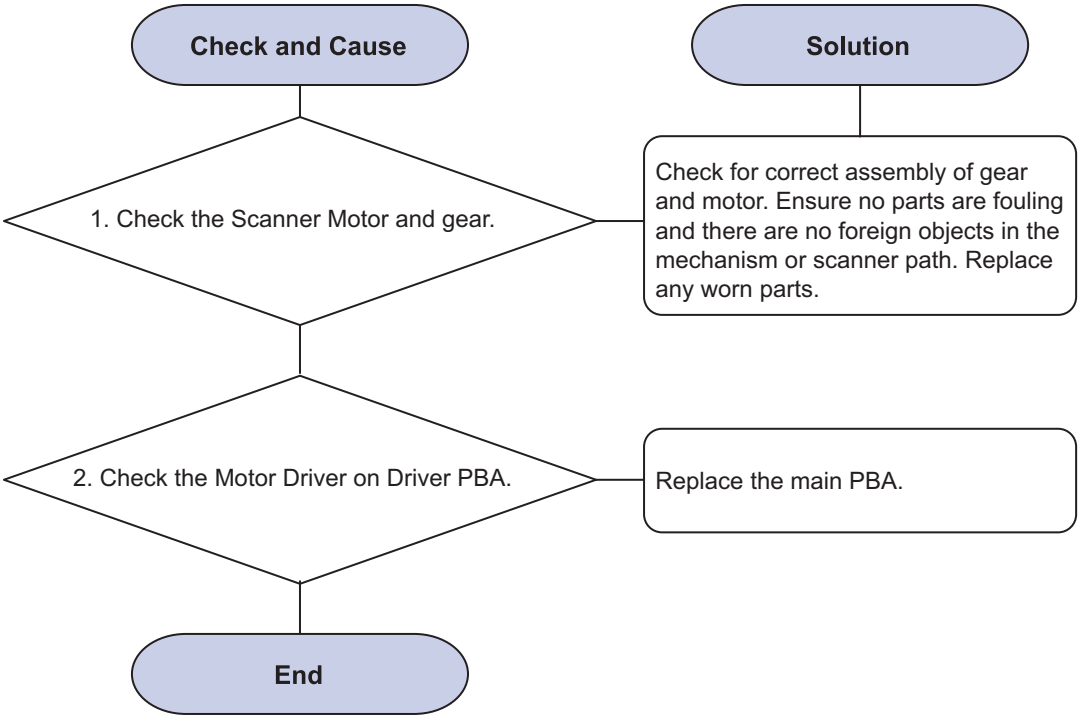
Description: Paper rolled around fuser rollers or 'Concertina' jam


Check and Cause
Solution
1.Contamination of the pressure roller or heat roller
After disassembling the fuser, clean contamination from between the heat roller and the thermistor and also clean contamination from the pressure roller.
Clean the surface of the rollers with IPA or water.
2.Damaged or deformed ribs, claw or springs.
Check for damage or deformation of the print claws and the holder plate claws, and repair or replace as appropriate.
End

4.2.4 Copy Problems

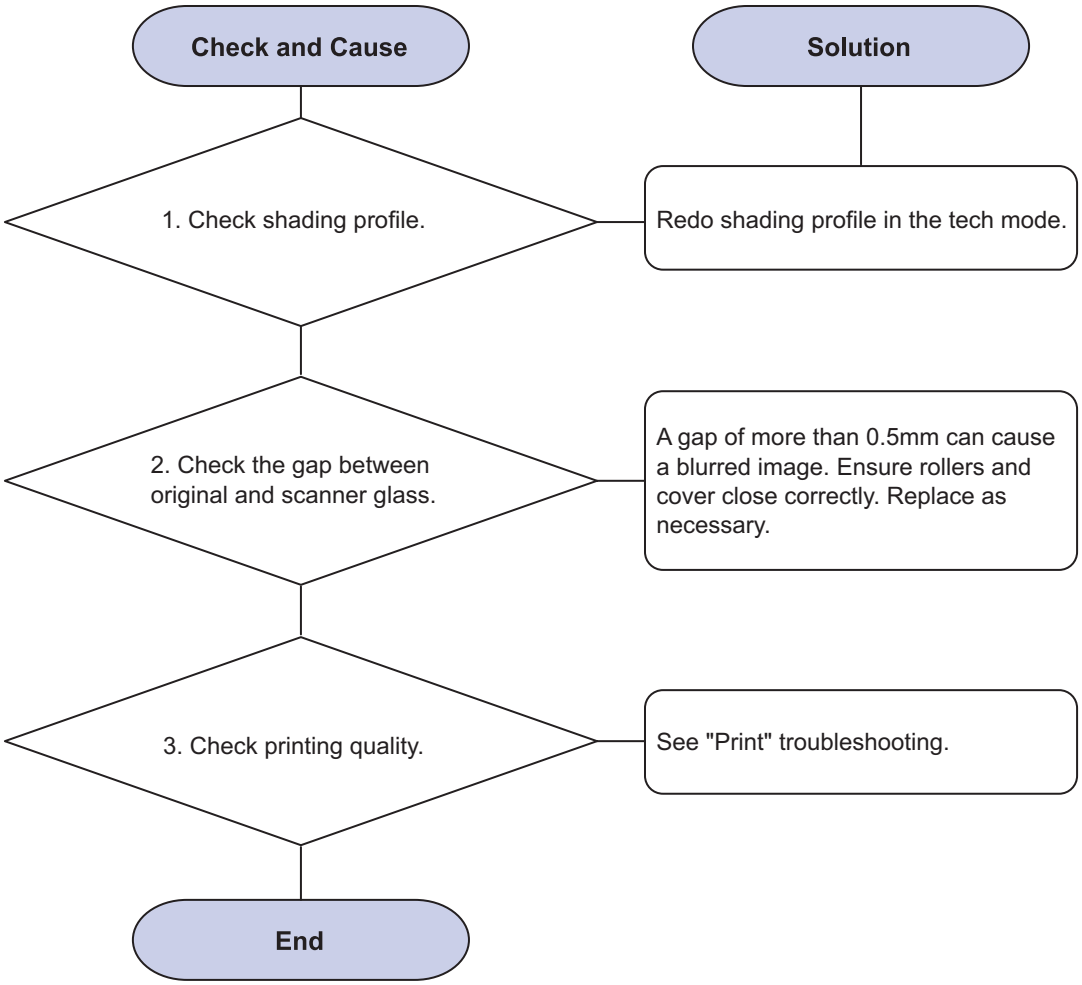
4.2.4.1 Abnormal noise

Description : There is noise from the Platen when copying


Check and Cause
Solution
1. Check the Scanner Motor and gear.
Check for correct assembly of gear and motor. Ensure no parts are fouling and there are no foreign objects in the mechanism or scanner path. Replace any worn parts.
2. Check the Motor Driver on Driver PBA.
Replace the main PBA.
End

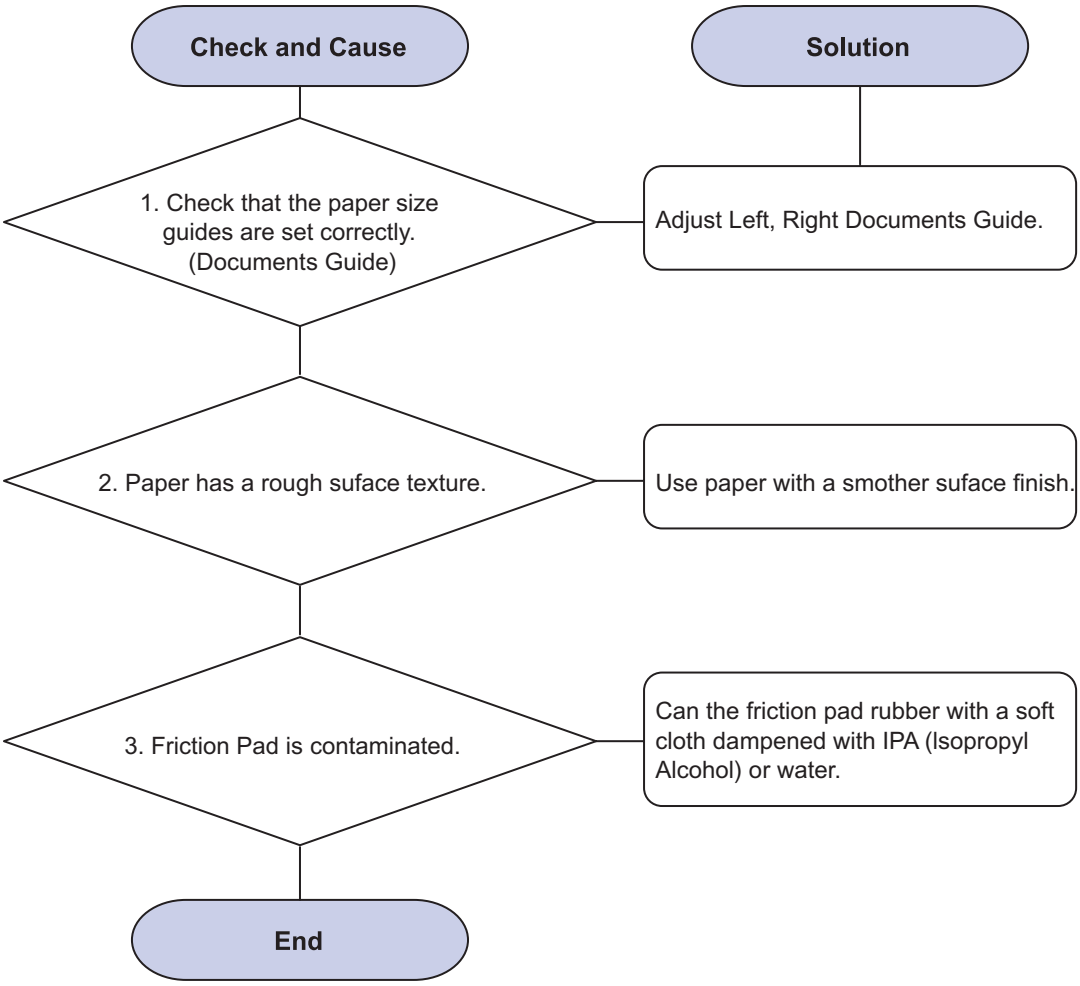
4.2.4.2 Defective Image Quality

Description : The copied image is excessively light or dark


Check and Cause
Solution
1. Check shading profile.
Redo shading profile in the tech mode.
2. Check the gap between original and scanner glass.
A gap of more than 0.5mm can cause a blurred image. Ensure rollers and cover close correctly. Replace as necessary.
3. Check printing quality.
See "Print" troubleshooting.
End

4.2.4.3 Multi-Feeding

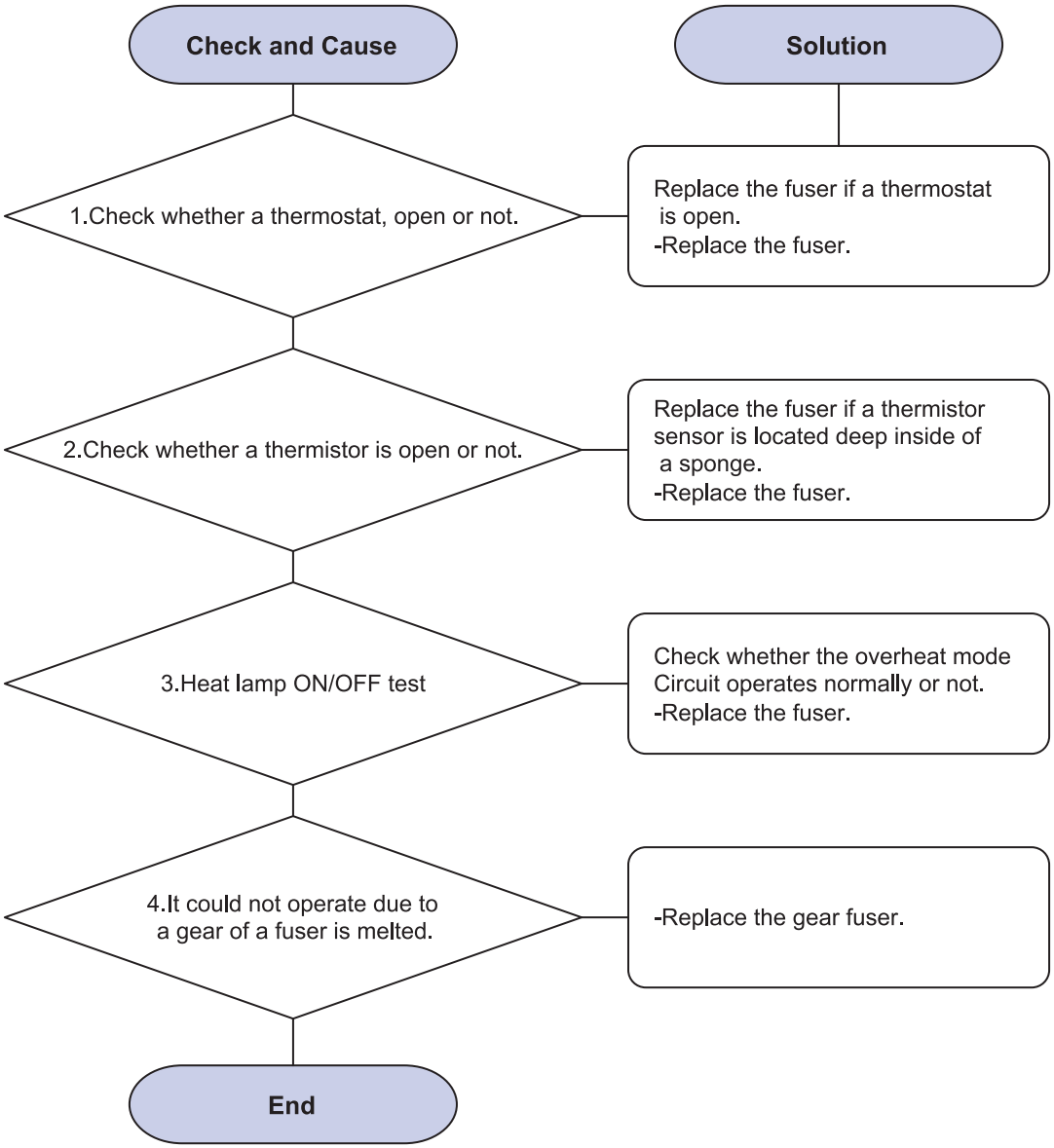
Description: Multiple sheets of Document are fed at once.


Check and Cause
Solution
1. Check that the paper size guides are set correctly. (Documents Guide)
Adjust Left, Right Documents Guide.
2. Paper has a rough suface texture.
Use paper with a smother suface finish.
3. Friction Pad is contaminated.
Can the friction pad rubber with a soft cloth dampened with IPA (Isopropyl Alcohol) or water.
End

4.2.5 The cause and solution of the malfunction

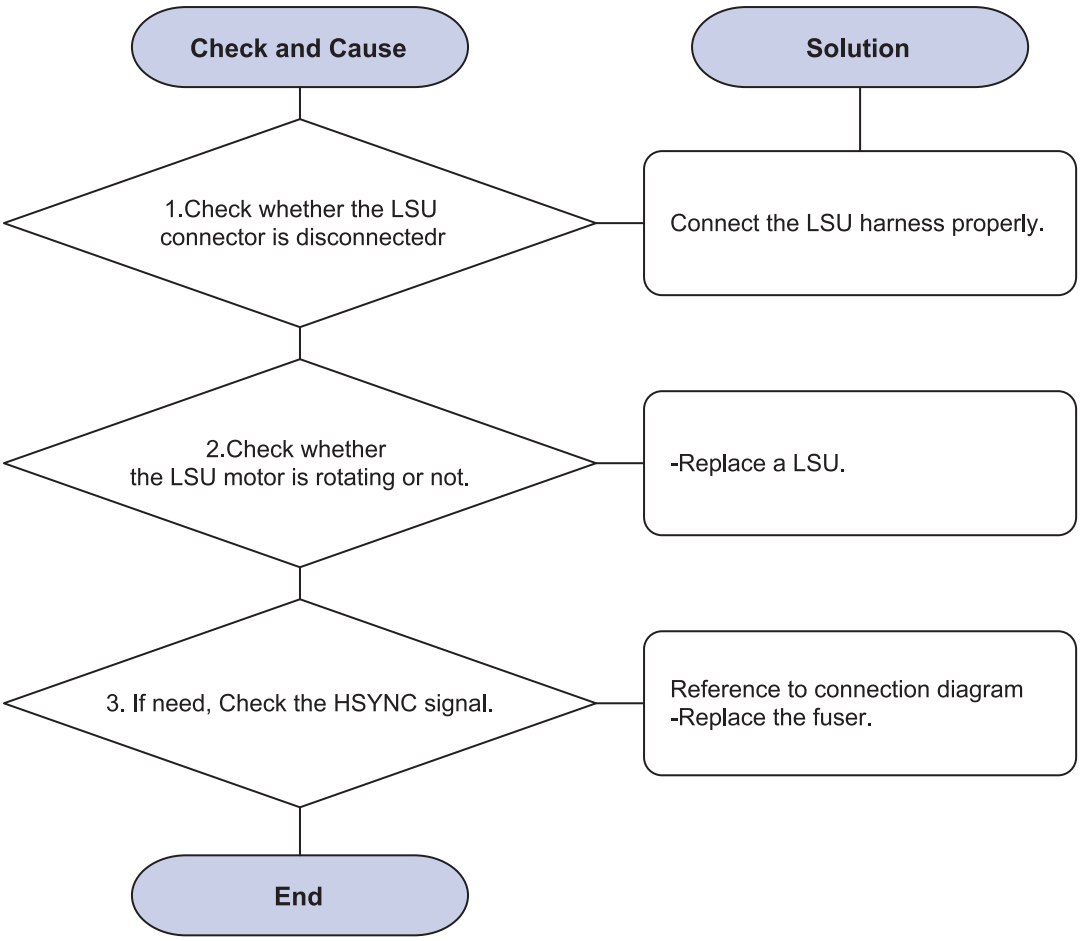
4.2.5.1 Fuser Error

Description : message (Fuser High Error / Fuser Low Error / Fuser Open Error) is displayed on a smart panel.


Check and Cause
Solution
1.Check whether a thermostat, open or not.
Replace the fuser if a thermostat is open.
-Replace the fuser.
2.Check whether a thermistor is open or not.
Replace the fuser if a thermistor sensor is located deep inside of a sponge.
-Replace the fuser.
3.Heat lamp ON/OFF test
Check whether the overheat mode Circuit operates normally or not.
-Replace the fuser.
4.It could not operate due to a gear of a fuser is melted.
-Replace the gear fuser.
End

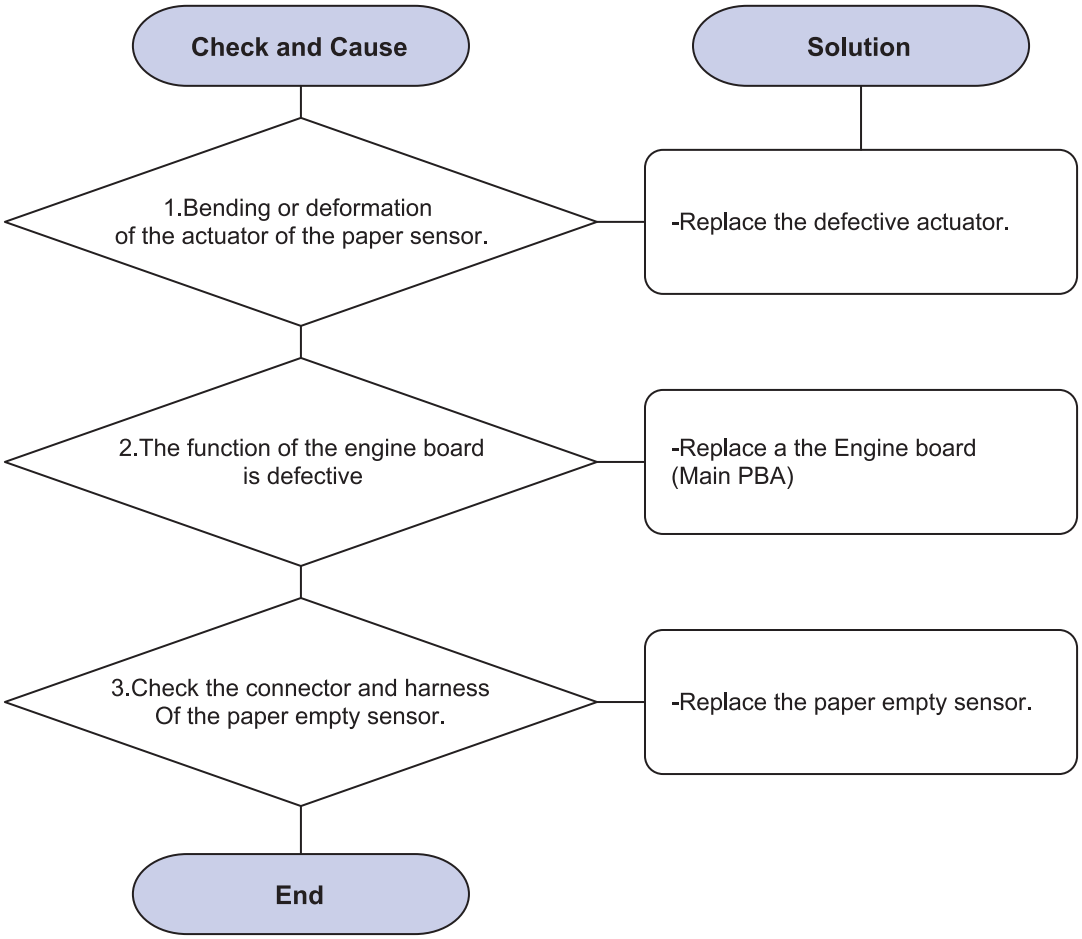
4.2.5.2 LSU Unit Error

Description : message LSU Error / LSU Hsyne Error is displayed on a smart panel.


Check and Cause
Solution
1.Check whether the LSU connector is disconnectedr
Connect the LSU harness properly.
2.Check whether the LSU motor is rotating or not.
-Replace a LSU.
3. If need, Check the HSYNC signal.
Reference to connection diagram
-Replace the fuser.
End

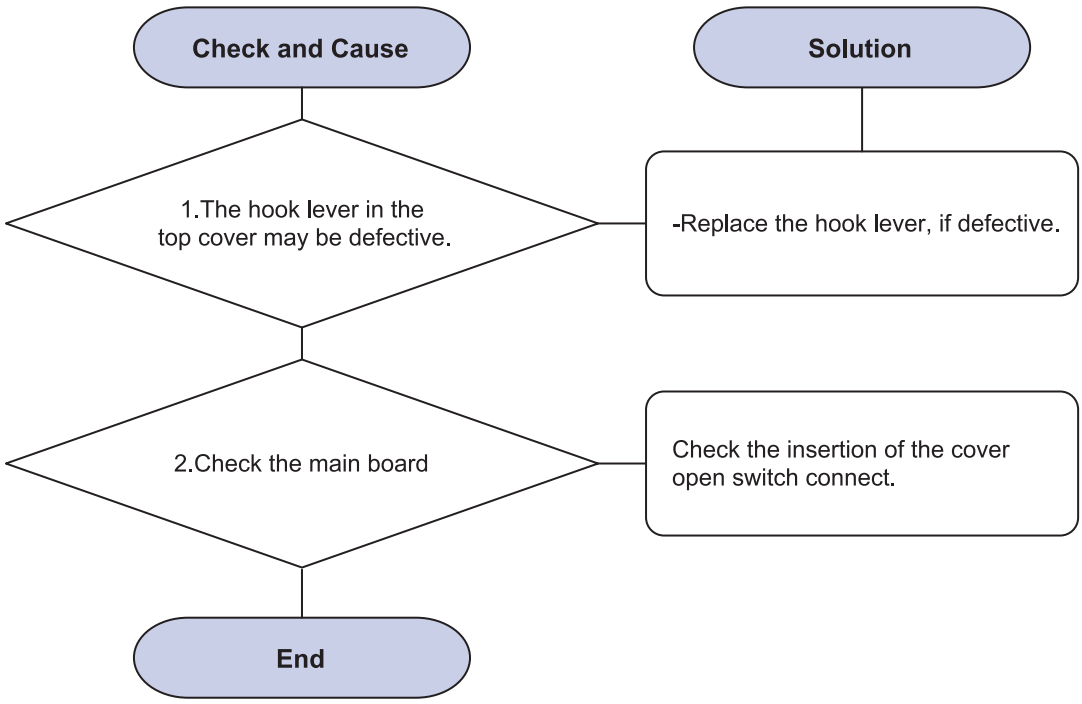
4.2.5.3 Paper Empty Error

Description : The paper lamp on the operator panel is on even when paper is loaded in the cassette.



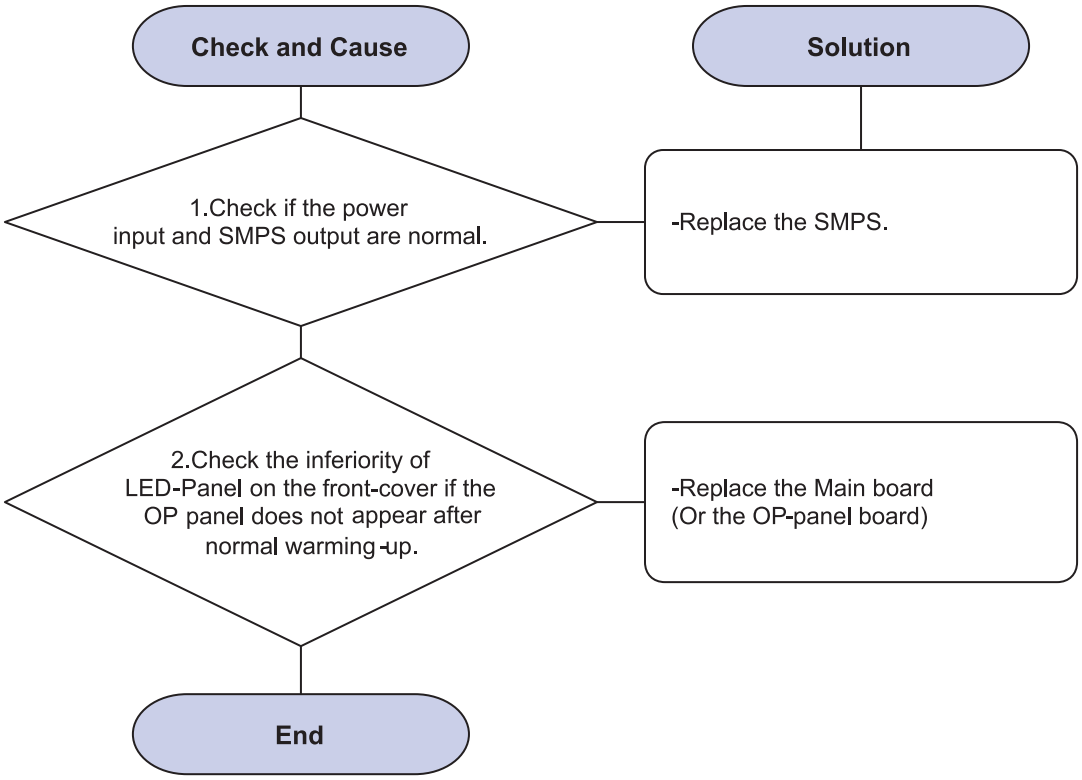
4.2.5.4 Cover open Error

Description : message “Cover open” is displayed on a smart panel.


Check and Cause
Solution
1.The hook lever in the top cover may be defective.
-Replace the hook lever, if defective.
2.Check the main board
Check the insertion of the cover open switch connect.
End

4.2.5.5 No power Error

Description : When system power is turned on, all lamps on the operator panel do not come on.


Check and Cause
Solution
1.Check if the power input and SMPS output are normal.
-Replace the SMPS.
2.Check the inferiority of LED-Panel on the front-cover if the OP panel does not appear after normal warming-up.
-Replace the Main board (Or the OP-panel board)
End

5. Exploded Views and Parts List

Contents

5.1 Main 5-2
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5.3 OPE Unit 5-6
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5.7 Main Drive 5-16
5.8 Fuser 5-18
5.9 Cassette 5-20

DIGITAL LASER PRINT

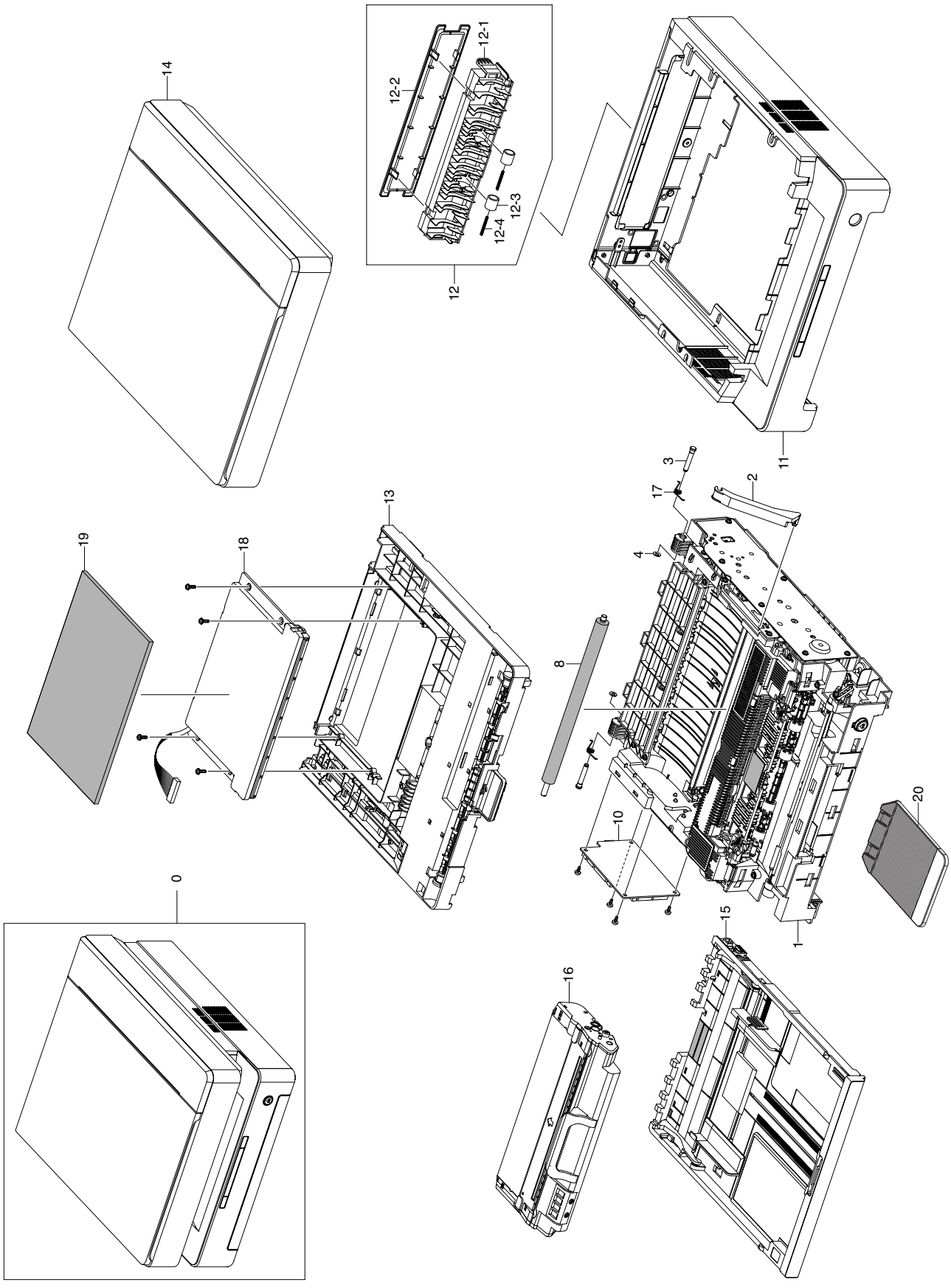
SCX-4500

The keynote of Product

Slim Size 3 in 1 MFP (SCX-4500)

- Printing Speed : 16PPM(A4), 17PPM(Ltr)
- Printing Resolution : 600 x 600dpi
- Interface : USB 2.0
- OPE : Touch Sensor
- Scanner : FLAT-BED CIS(600dpi)
- Scan Resolution(Optiacl) : 600 x 2,400dpi
- Paper Input Capacity : 100 sheets
- Paper Output Capacity : 30 sheets
- Engine Life : 50,000 Pages
- Toner : Initial(1K) / Sales(2K)

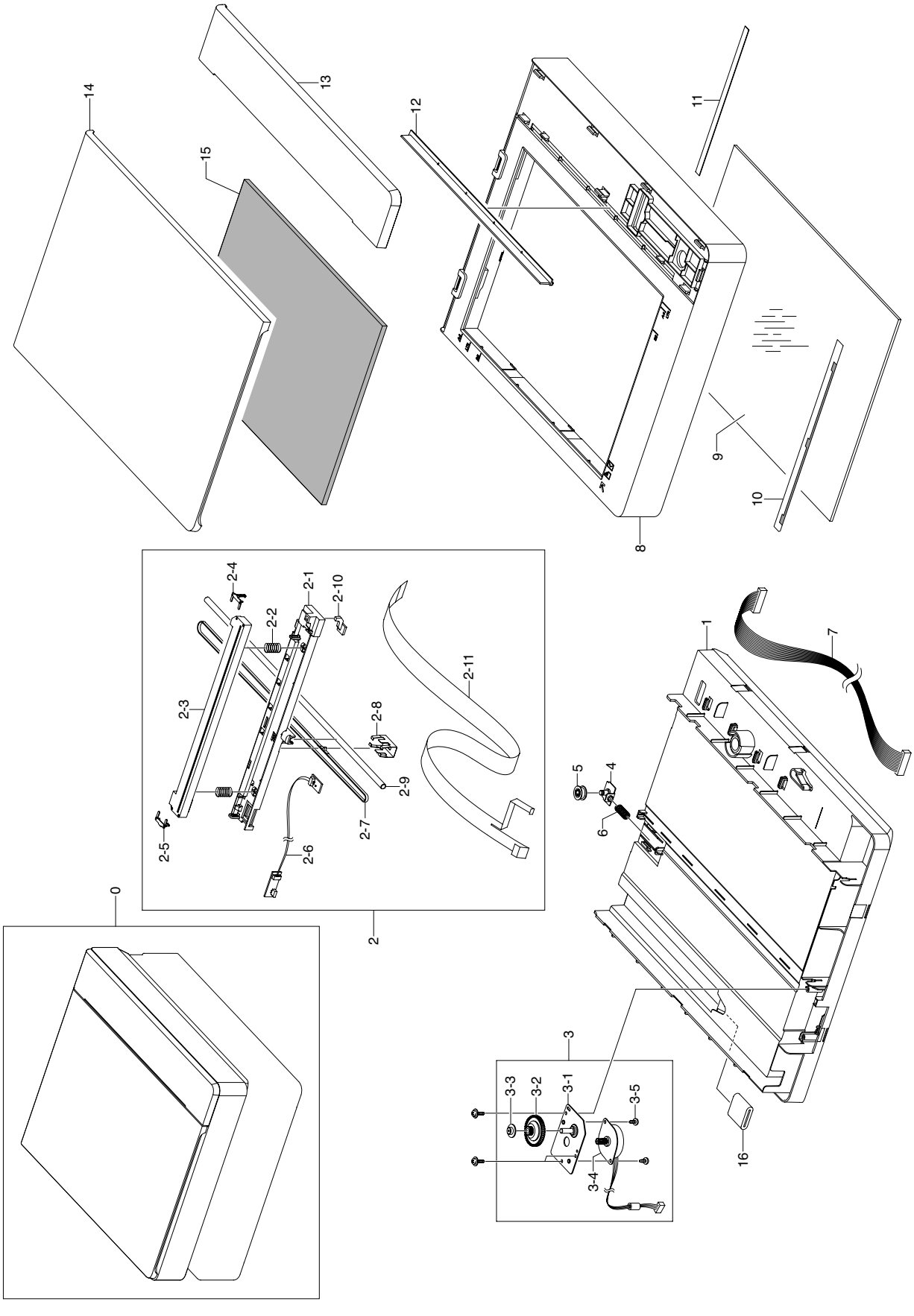
5.1 Main



Main Parts List

Drawer#	SEC_CODE	DESCRIPTION	QT'Y	Service	Remark
5.1-0	SCX-4500	SET			
5.1-1	JC96-04645A	ELA UNIT-FRAME LOWER	1	Y	
5.1-2	JC66-01564A	LINK-UPPER	1	Y	
5.1-3	JC61-02178A	STUD-HINGE	2	Y	
5.1-4	6031-001602	WASHER-PLAIN	2	Y	
5.1-8	JC66-01218A	ROLLER-TRANSFER	1	Y	
5.1-10	JC92-01891A	PBA-MAIN	1	Y	
5.1-11	JC97-02978A	MEA UNIT-COVER LOWER	1	Y	
5.1-12	JC97-02990A	MEA UNIT-FEED LOWER	1	Y	
5.1-12-1	JC61-01980A	GUIDE-FEED LOWER	1	Y	
5.1-12-2	JC63-01385A	COVER-DUMMY REAR	1	Y	
5.1-12-3	JC66-01510A	ROLLER-IDLE	2	Y	
5.1-12-4	6107-001277	SPRING-ETC	2	Y	
5.1-13	JC96-04644A	ELA UNIT-FRAME UPPER	1	Y	
5.1-14	JC96-04529A	ELA UNIT-SCANNER	1	Y	
5.1-15	JC97-02933A	MEA UNIT-CASSETTE	1	Y	
5.1-16	JC96-04523A	CARTRIDGE-TONER	1	N	
5.1-17	6107-001351	SPRING-TS	1	Y	
5.1-18	JC96-04623A	ELA UNIT LSU	1	Y	
5.1-19	JC63-00209A	WHITE-SHEET-SPONGE	1	Y	
5.1-20	JC99-02108A	INA-STACKER	1	Y	

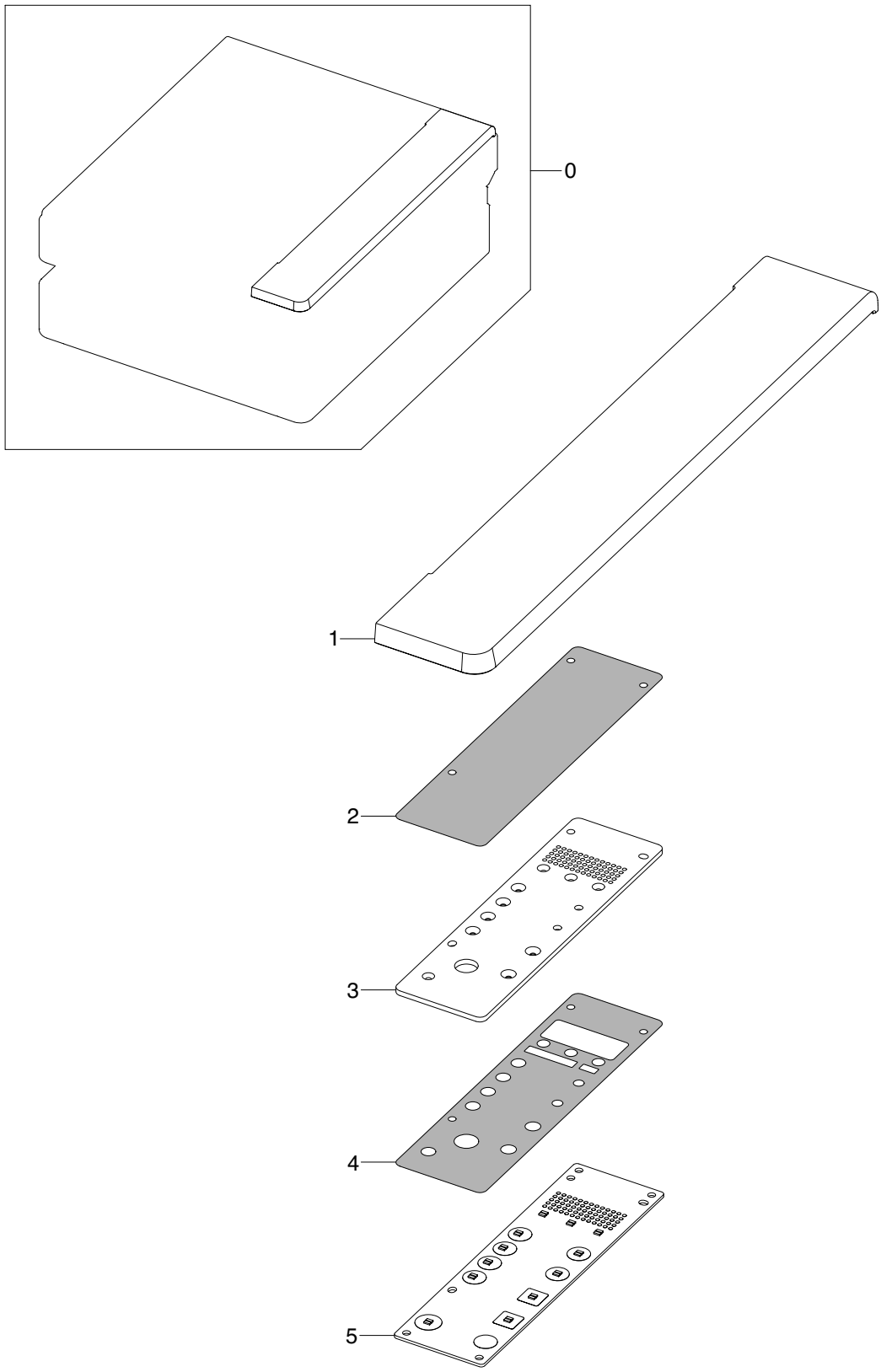
5.2 Scanner Unit



Scanner Unit Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.2-0	JC97-02930A	MEA UNIT-SCAN UPPER	1	Y	
5.2-1	JC63-01331A	COVER-SCAN UPPER	1	Y	
5.2-2	JC96-04531A	ELA UNIT-CIS	1	Y	
5.2-2-1	JC61-01969A	BRACKET-CIS	1	Y	
5.2-2-2	6107-001137	SPRING CS	2	Y	
5.2-2-3	0609-001287	CONTACT-IMAGE SENSOR	1	Y	
5.2-2-4	JC66-01580A	SLIDER-CIS	2	Y	
5.2-2-6	JC92-01904A	PBA LENS INDICATOR	1	Y	
5.2-2-7	6602-001261	TIMMING GEAR	1	Y	
5.2-2-8	JB61-00232A	CLIP-P-BELT	1	Y	
5.2-2-9	JC66-01448A	SHAFT-CIS	1	Y	
5.2-2-10	JC67-00231	LENS-LED INDICATOR	1	Y	
5.2-2-11	JC39-00729	HARNESS-CIS-FFC	1	Y	
5.2-3	JC96-04532A	ELA UNIT-SCAN DRIVE	1	Y	
5.2-3-1	JC61-01640A	BRACKET MOTOR-P-SCAN	1	Y	
5.2-3-2	JC66-01201A	GEAR-M-PULLY	1	Y	
5.2-3-3	JC67-00069A	CAD-M-PULLY	1	Y	
5.2-3-4	JC31-00080A	MOTOR STEP	1	Y	
5.2-3-5	6003-000269	SCREW-TAPTITE	2	Y	
5.2-4	JC61-00931A	BRACKET-P-PULLY	1	Y	
5.2-5	JC66-00713A	PULLEY-M-IDLE	1	Y	
5.2-6	6107-001194	SPRING CS	1	Y	
5.2-7	JC39-00680A	HANESS-OPE	1	Y	
5.2-8	JC97-02930A	MEA UNIT-SCAN UPPER	1	Y	
5.2-9	JB01-00002A	CLASS-PLATEN	1	Y	
5.2-10	JB68-00644A	LASER_SHADING	1	Y	
5.2-11	0203-001841	TAPE-DOUBLE FACE	1	Y	
5.2-12	JC64-00317A	WINDOW-INDICATOR	1	Y	
5.2-13	JC96-04533C	ELA-UNIT-SCAN OPE	1	Y	
5.2-14	JC63-013333A	COVER SCAN PLATEN	1	Y	
5.2-15	JC63-00209A	SHEETUNIT SPONGE	1	Y	
5.2-16	3301-001742	CORE-FERRITE	1	N	

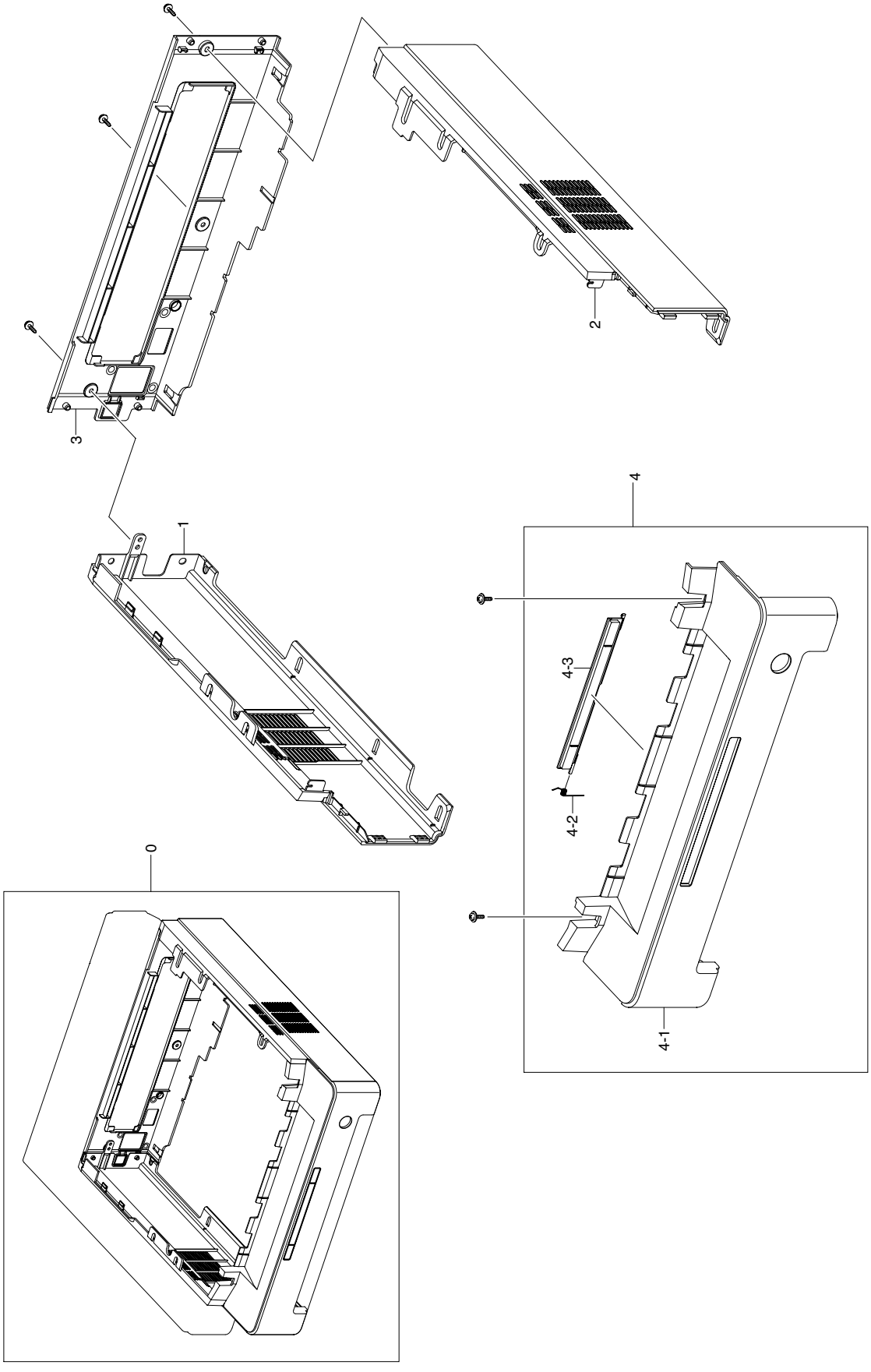
5.3 OPE Unit



OPE Unit Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.3-0	JC96-04533A	ELA UNIT-SCAN OPE	1	Y	
5.3-1	JC63-01333A	COVER-SCAN OPE	1	Y	
5.3-2	JC63-01468A	SHEET-SCAN DIFUSSION	1	Y	
5.3-3	JC61-02008A	HOLDER LED MAIN	1	Y	
5.3-4	0203-002250	TAPE-DOUBLE FACE	1	Y	
5.3-5	JC92-01892A	PBA-OPE	1	Y	

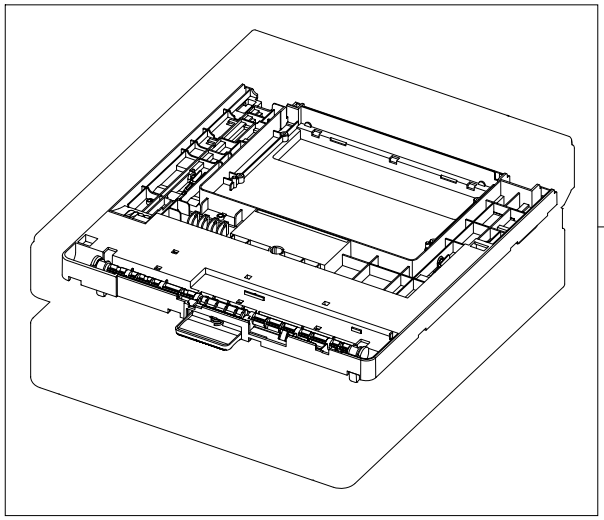
5.4 Cover Lower

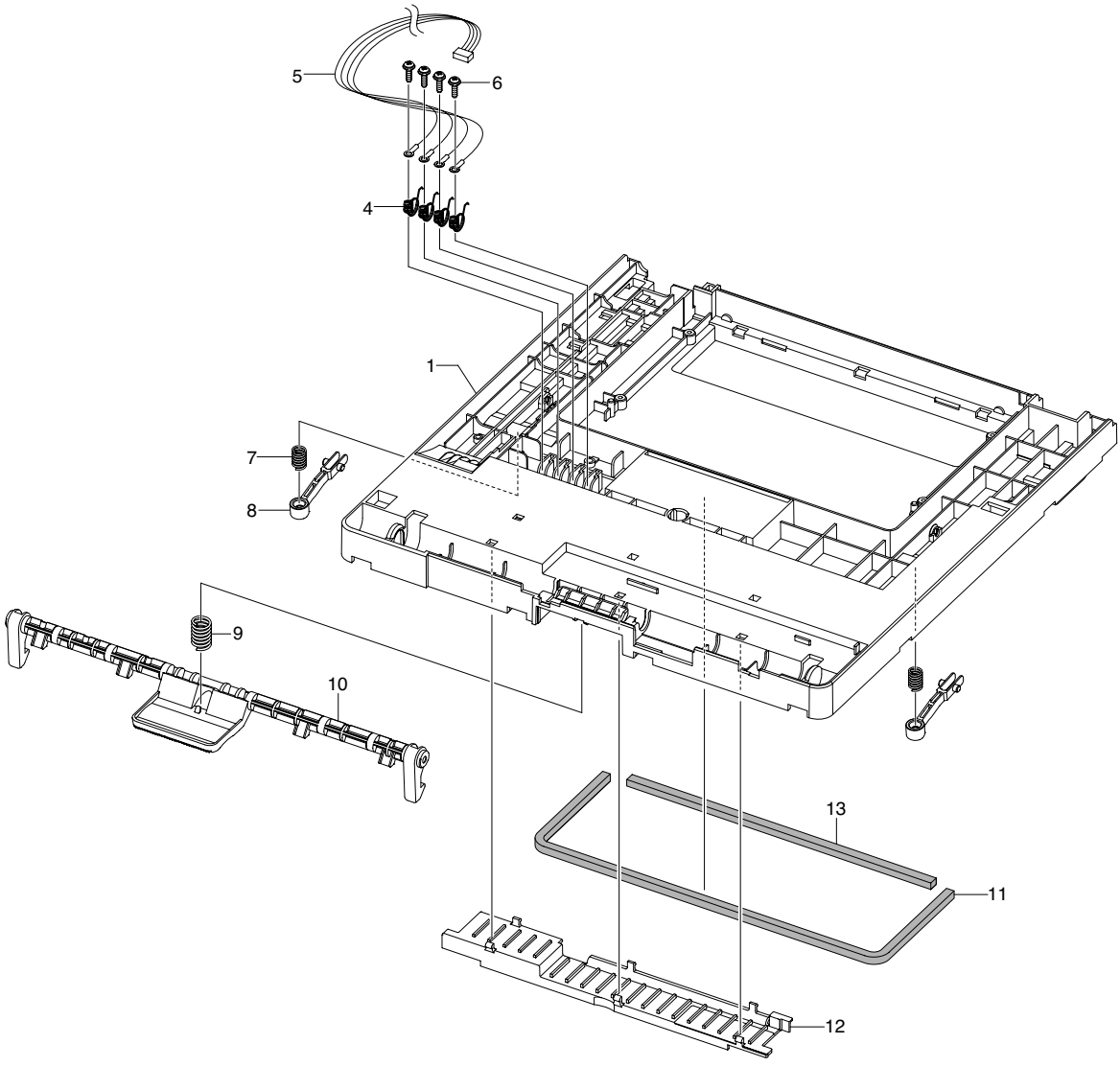


Cover Lower Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.4-0	JC97-02978A	MEA UNIT-COVER LOWER	1	Y	
5.4-1	JC63-01383A	COVER LEFT	1	Y	
5.4-2	JC63-01384A	COVER RIGHT	1	Y	
5.4-3	JC63-01436A	COVER REAR	1	Y	
5.4-4	JC97-03055A	MEA UNIT-COVER FRONT	1	Y	
5.4-4-1	JC63-01382A	COVER-FRONT	1	Y	
5.4-4-2	JC61-00060A	SPRING ETC-TS BLADE	1	Y	
5.4-4-3	JC63-01434A	COVER DOOR STAKER	1	Y	

5.5 Frame Upper

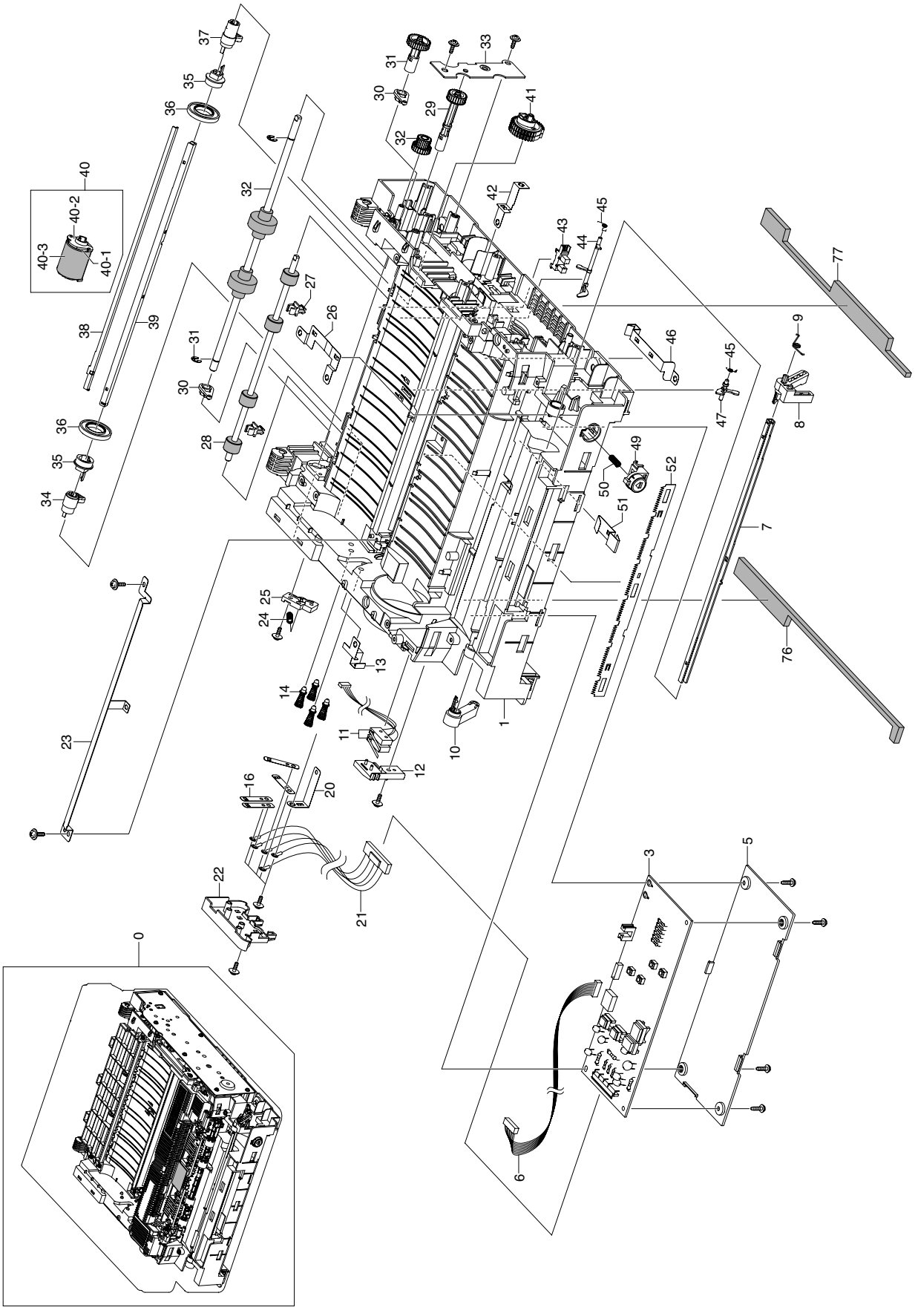




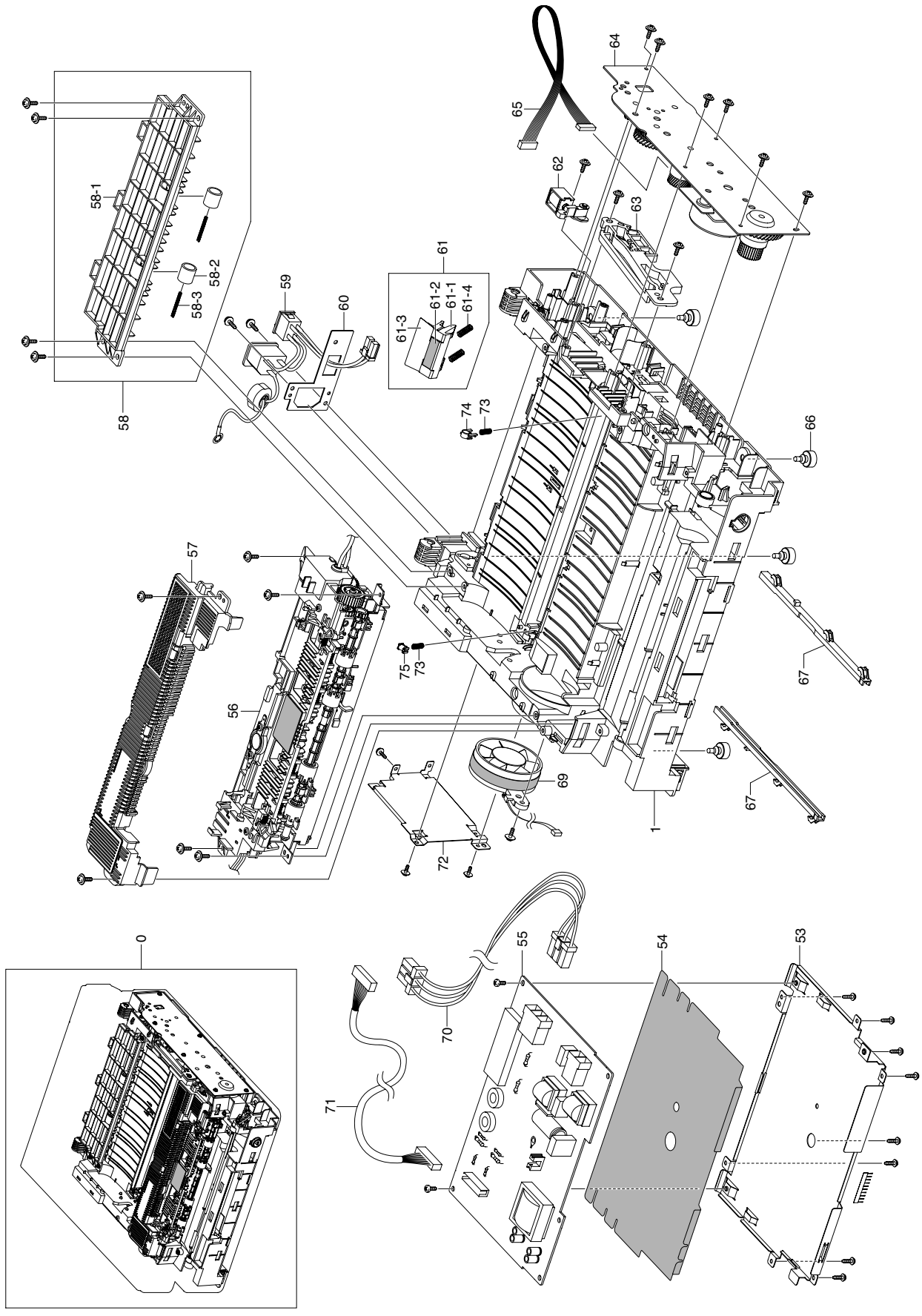
Frame Upper Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.5-0	JC96-04644A	ELA UNIT-FRAME UPPER	1	Y	
5.5-1	JC61-02107A	FRAME BASE UPPER	1	Y	
5.5-4	JC65-00019A	TERMINAL CRUM	4	Y	
5.5-5	JC39-00761A	HARNESS-CRUM	1	Y	
5.5-6	6003-000282	SCREW-TAPTITE	4	Y	
5.5-7	JC61-70958A	SPRING ETC-GUIDE TR	2	Y	
5.5-8	JC61-02108A	PLATE GUIDE DEVE	1	Y	
5.5-9	JC61-70932A	SPRING ETC-GUIDE DEVE	1	Y	
5.5-10	JC66-01545A	LEVEL HANDLE UPPER	1	Y	
5.5-11	JC62-00417A	SEAL-LSU	1	Y	
5.5-12	JC63-01444A	COVER DUMMY EXTRA	1	Y	
5.5-13	JC62-00464A	SEAL-LSU REAR	1	Y	

5.6 Frame Lower 1



Frame Lower 2



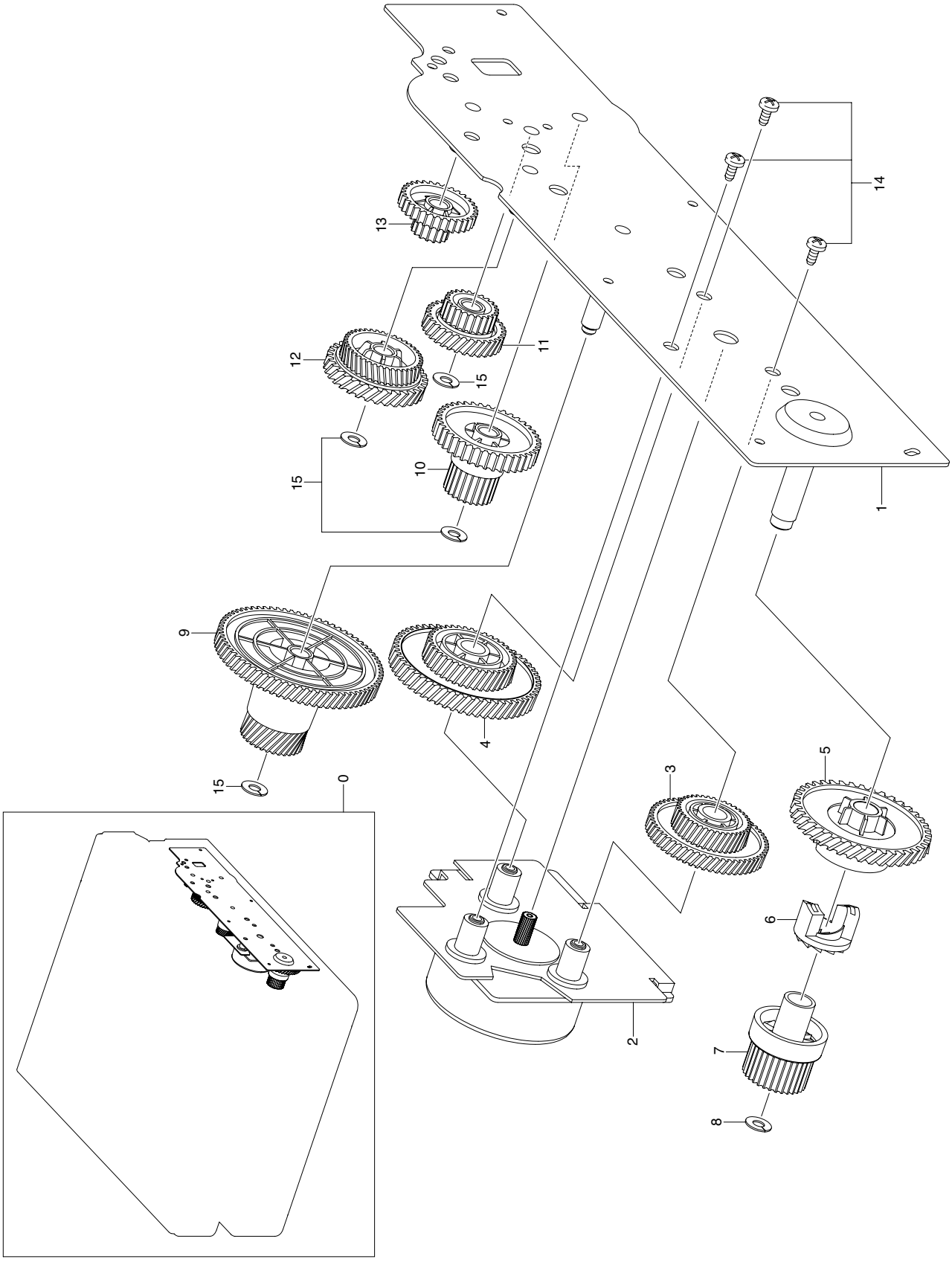
Frame Lower Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.6-0	JC96-04645A	ELA UNIT-FRAME LOWER	1	Y	
5.6-1	JC61-02113A	FRAME-BASE LOWER	1	Y	
5.6-3	JC44-00146A	HVPS	1	Y	
5.6-5	JC63-01372A	COVER-HVPS	1	Y	
5.6-6	JC39-00676A	HARNESS-HVPS	1	Y	
5.6-7	JC66-00829A	SHAFT-P-PICK_UP	1	Y	
5.6-8	JC66-01544A	LEVER-CASSETE ROCK	1	Y	
5.6-9	6107-001170	SPRING-TS	1	Y	
5.6-10	JC66-01573A	LEVER-CASSETE GUIDE	1	Y	
5.6-11	JC39-00677A	HARNESS-COVER	1	Y	
5.6-12	JC61-02009A	HOLDER-SWITCH	1	Y	
5.6-13	JC63-01437A	GROUND-MAIN	1	Y	
5.6-14	JC75-00049A	MEC-TERMINAL	4	Y	
5.6-16	JC65-00024A	TERMINAL-HV	4	Y	
5.6-20	JC63-01415A	GROUND-P THV	1	Y	
5.6-21	JC39-00676A	HARNESS-HVPS	1	Y	
5.6-22	JC61-02109A	HOUSING-TERMINAL	1	Y	
5.6-23	JC61-02130A	GUIDE-EARTH TRNASFER	1	Y	
5.6-24	JC61-70932A	SPRING ETC-GUIDE DEVE	1	Y	
5.6-25	JC61-01548A	HOLDER-M-CAM	1	Y	
5.6-26	JC63-01416A	GROUND-HVPS	1	Y	
5.6-27	JC72-00382B	PMO-BUSHING FEED	2	Y	
5.6-28	JC66-00526A	ROLLER-FEED ROLLER 1	1	Y	
5.6-29	JC66-01439A	GEAR-REGI	1	Y	
5.6-30	JC72-41191B	PMO-BEARING SHAFT	1	Y	
5.6-31	JC66-01435A	GEAR-FEED	1	Y	
5.6-32	JC66-01436A	GEAR-DRV FEED	1	Y	
5.6-33	JC61-01967A	BRACKET_FEED	1	Y	
5.6-34	JC66-01469A	CAM-PICKUP L	1	Y	
5.6-35	JC61-01713A	STOPPER-PICK_UP R	2	Y	
5.6-36	JC66-01509A	ROLLER-PICKUP IDLE	2	Y	
5.6-37	JC66-01468A	CAM-PICKUP R	1	Y	
5.6-38	JC61-01281A	BRACKET-P-BAR_PICK_UP	1	Y	
5.6-39	JC66-00829A	SHAFT-P-PICK_UP	1	Y	
5.6-40	JC97-02982A	MEA UNIT-ROLLER PICKUP	1	Y	
5.6-40-1	JC61-00909A	HOUSING-M-PICK UP_R2	1	Y	
5.6-40-2	JC61-02079A	HOUSING-PICKUP B	1	Y	
5.6-40-3	JC72-01231A	SPONGE-ROLLER PICK_UP	1	Y	
5.6-41	JC97-02957A	MEA UNIT-GEAR PICKUP	1	Y	
5.6-42	JC63-01414A	GROUND DRIVE	1	Y	
5.6-43	0604-001095	PHOTO INTERRUTER	1	Y	
5.6-44	JC66-01541A	ATUATOR EMPTY	1	Y	
5.6-45	6107-001164	SPRING TS	2	Y	

Frame Lower Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.6-46	JC63-01413A	GROUND-SAW	1	Y	
5.6-47	JC66-01542A	ACTUATOR-FEED	1	Y	
5.6-49	JC64-00332A	BUTTON-CASSETTE	1	Y	
5.6-50	JC61-70940A	SPRING ETC-TR(12)	1	Y	
5.6-51	JC63-01417A	GROUND-FUSER	1	Y	
5.6-52	JC70-10232A	IPR-PLATE SAW	1	Y	
5.6-53	JC63-01420A	SHIELD-SMPS	1	Y	
5.6-54	JC63-01411A	SHEET-SMPS	1	Y	
5.6-55	JC44-00147A	SMPS-V1	1	Y	
5.6-56	JC96-04540A	ELA HOU-FUSER	1	Y	
5.6-57	JC63-01430A	COVER-DUMMY REAR	1	Y	
5.6-58	JC97-02939A	MEA UNIT-FEED UPPER	1	Y	
5.6-58-1	JC61-01979A	GUIDE-FEED UPPER	1	Y	
5.6-58-2	JC66-01510A	ROLLER-IDLE	2	Y	
5.6-58-3	6107-001277	SPRING-ETC	2	Y	
5.6-59	JC39-00685A	HARNESS-INLET	1	Y	
5.6-60	JC61-02114A	BRACKET-REAR	1	Y	
5.6-61	JC97-02937A	MEA UNIT-HOLDER PICKUP	1	Y	
5.6-61-1	JC69-00987A	PAD-FRICTION	1	Y	
5.6-61-2	JC61-02076A	HOLDER-PAD	1	Y	
5.6-61-3	JC63-00290A	SHEET-HOLDER PAD	1	Y	
5.6-61-4	JC61-70911A	SPRING ETC-EXIT ROLL FD	2	Y	
5.6-62	JC96-04622A	ELA UNIT-SOLENOID	1	Y	
5.6-63	JC66-01575A	LINK-RAIL UPPER	1	Y	
5.6-64	JC96-04715A	ELA UNIT DRIVE	1	Y	
5.6-65	JC39-00679A	HARNESS-MOTOR	1	Y	
5.6-66	JC61-40001A	FOOT-ML 80	4	Y	
5.6-67	JC61-02110A	GUIDE-CASETTE RAIL	2	Y	
5.6-69	JC31-00089A	FAN-DC_HAWK	1	Y	
5.6-70	JC39-00737A	HARNESS-FUSER	1	Y	
5.6-71	JC39-00697A	HARNESS-MAIN	1	Y	
5.6-72	JC63-01421A	SHIELD-MAIN	1	Y	
5.6-73	JC61-70940A	SPRING ETC-TR(12)	2	Y	
5.6-74	JC61-00588A	BUSH-M-TRL	1	Y	
5.6-75	JC72-00102A	PMO-BUSHING_TR(L)	1	Y	
5.6-76	JC72-01418A	SPONGE-LEFT	1	Y	
5.6-77	JC72-01419A	SPONGE-RIGHT	1	Y	

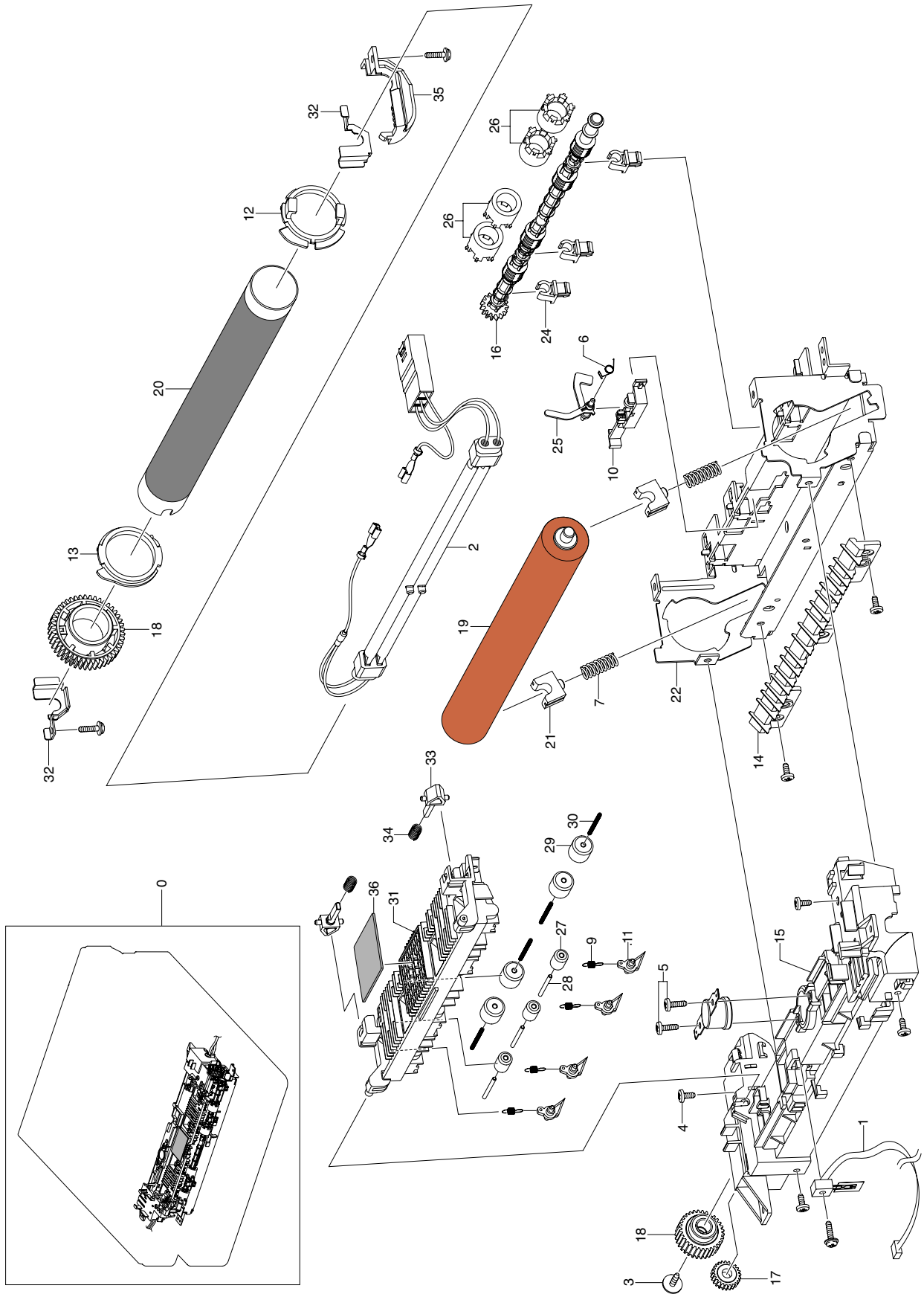
5.7 Main Drive



Main Drive Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.7-0	JC96-04715A	ELA UNIT DRIVE			
5.7-1	JC61-01968A	BRACKET GEAR	1	Y	
5.7-2	JC31-00079A	BLDC-MOTOR	1	Y	
5.7-3	JC66-01445A	GEAR RDCN FUSER	1	Y	
5.7-4	JC66-01444A	GEAR RDCN OPC	1	Y	
5.7-5	JC66-01441A	GEAR DRV FUSER OUT	1	Y	
5.7-6	JC66-00340A	GEAR HUB CLUTCH	1	Y	
5.7-7	JC66-01800A	GEAR_DRV FUSER IN	1	Y	
5.7-8	6031-000023	WASHER-PLAIN	1	Y	
5.7-9	JC66-01440A	GEAR DRV OPC	1	Y	
5.7-10	JC66-01443A	GEAR DRIVE PICK UP	1	Y	
5.7-11	JC66-01447A	GEAR RDCN FEED B	1	Y	
5.7-12	JC66-01446A	GEAR RDCN FEED A	1	Y	
5.7-13	JC66-01442A	GEAR DRV REGI	1	Y	
5.7-14	6001-000130	SCREW MACHINE	3	Y	
5.7-15	6031-001602	WHASHER-PLAIN	4	Y	

5.8 Fuser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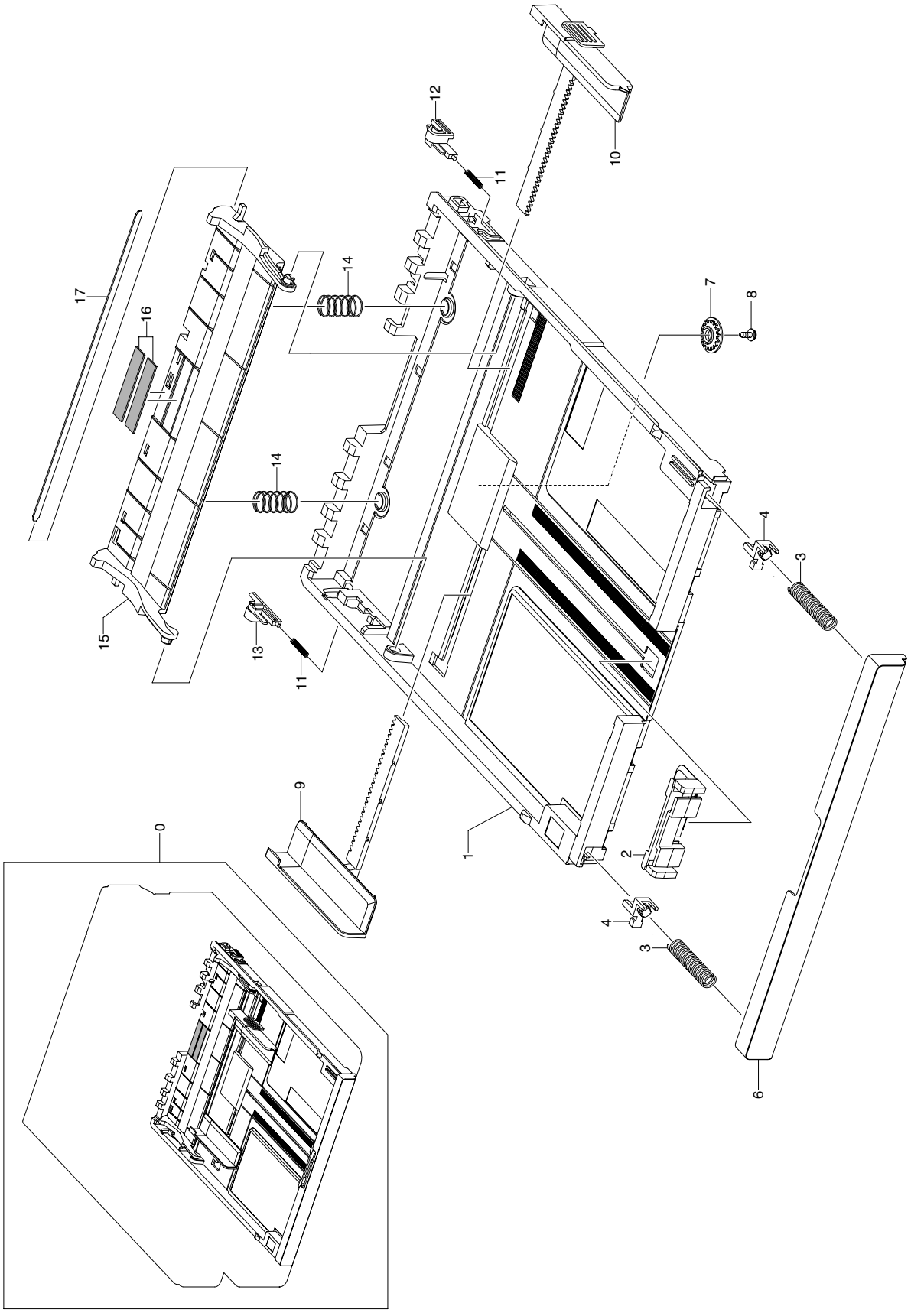
Fuser Parts List

Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.8-0	JC96-04540A	ELA HOU-FUSER	1	Y	
5.8-1	1404-001427	THERMISTOR-NTC ASSY	1	Y	
5.8-2	4713-001226	LAMP-HALOGEN	1	Y	
5.8-3	6006-001078	SCREW-TAPTITE	1	Y	
5.8-4	6003-000269	SCREW-TAPTITE	1	Y	
5.8-5	6003-000282	SCREW-TAPTITE	2	Y	
5.8-6	6107-001165	SPRING-TS	1	Y	
5.8-7	JC61-00056A	SPRING ETC-PR(7300)	2	Y	
5.8-8	JC66-01254A	GEAR-FUSER	1	Y	
5.8-9	JC61-00064A	SPRING ETC-CLAW	1	Y	
5.8-10	JC61-02010A	HOLDER-ACTUATOR	1	Y	
5.8-11	JC61-02184A	GUIDE-CLAW PI	4	Y	
5.8-12	JC61-00887A	BUSH-M-HR R_R2	1	Y	
5.8-13	JC61-00888A	BUSH-M-HR L_R2	1	Y	
5.8-14	JC61-02450A	GUIDE-INPUT	1	Y	
5.8-15	JC63-01431A	COVER-FUSER	1	Y	
5.8-16	JC66-00380A	ROLLER-M-EXIT F/UP	1	Y	
5.8-17	JC72-00143A	PMO-GEAR_EXIT_DRV16	1	Y	
5.8-18	JC66-01254A	GEAR-FUSER	1	Y	
5.8-19	JC66-00600A	ROLLER-PRESSURE	1	Y	
5.8-20	JC66-01531A	ROLLER-HEAT	1	Y	
5.8-21	JC66-10901A	BUSH	2	Y	
5.8-22	JC61-02137A	FRAME-FUSER	1	Y	
5.8-23	4712-001027	THERMOSTAT	1	Y	
5.8-24	JC72-00382A	PMO-BUSHING TX	3	Y	
5.8-25	JC66-01533A	ACTUATOR-EXIT	1	Y	
5.8-26	JC73-00255A	RUBBER-EXIT F/UP	4	Y	
5.8-27	JC66-01312B	ROLLER-IDLE	1	Y	
5.8-28	JC70-00064A	IPR-PIN ROLLER EXIT	1	Y	
5.8-29	JC72-20902B	PEX-ROLLER F/UP(2)	1	Y	
5.8-30	6107-001347	SPRING-ETC	4	Y	
5.8-31	JC61-02129A	GUIDE-EXIT	1	Y	
5.8-32	JC61-02012A	HOLDER-LAMP	1	Y	
5.8-33	JC67-00111A	CAP-M_ACTUATOR_UP	2	Y	
5.8-34	6107-001346	SPRING-CS	2	Y	
5.8-35	JC63-01446A	COVER-LAMP	1	Y	
5.8-36	JC63-01739A	FELT-FUSER	1	Y	

5.9 Cassette

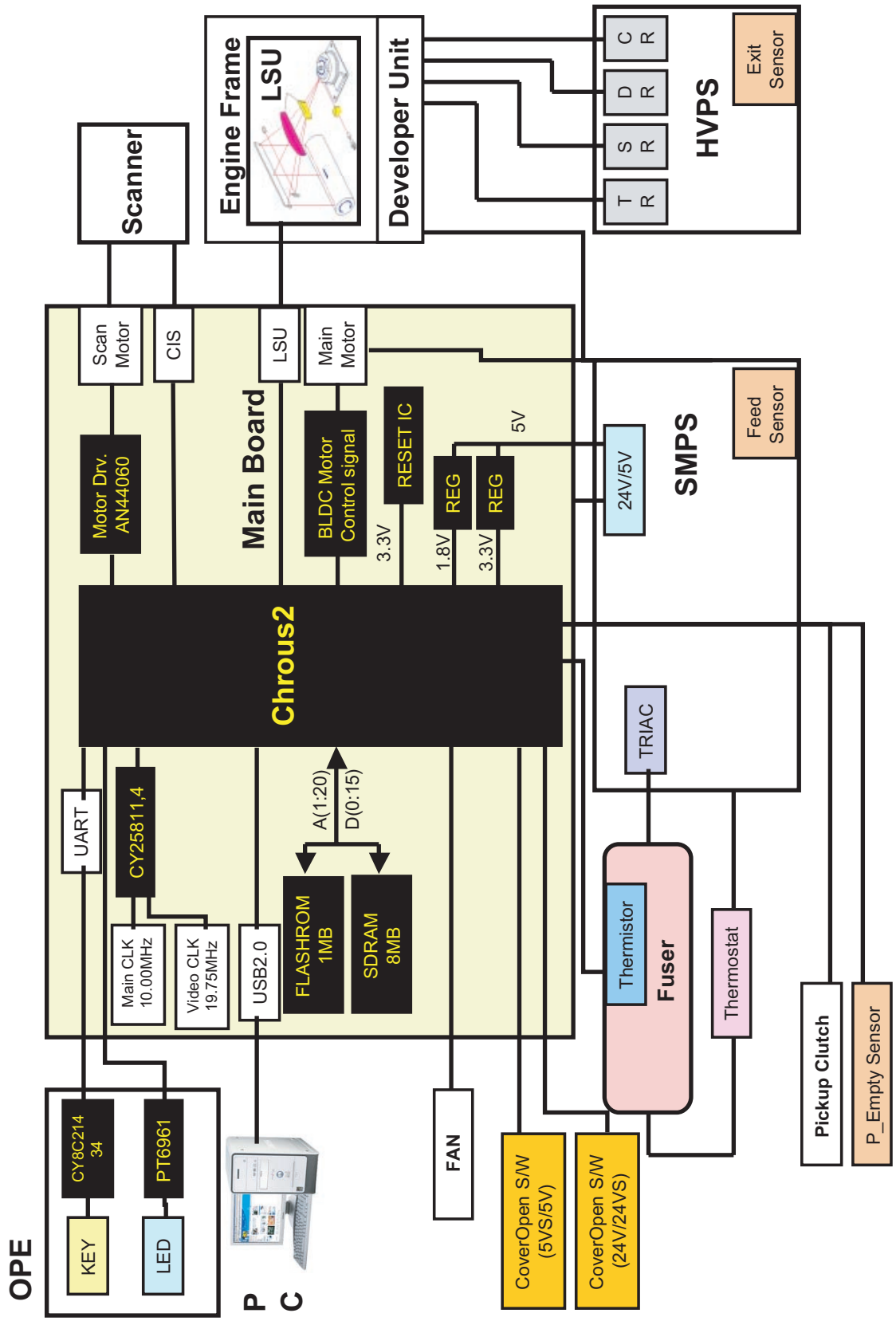


Cassette Parts List

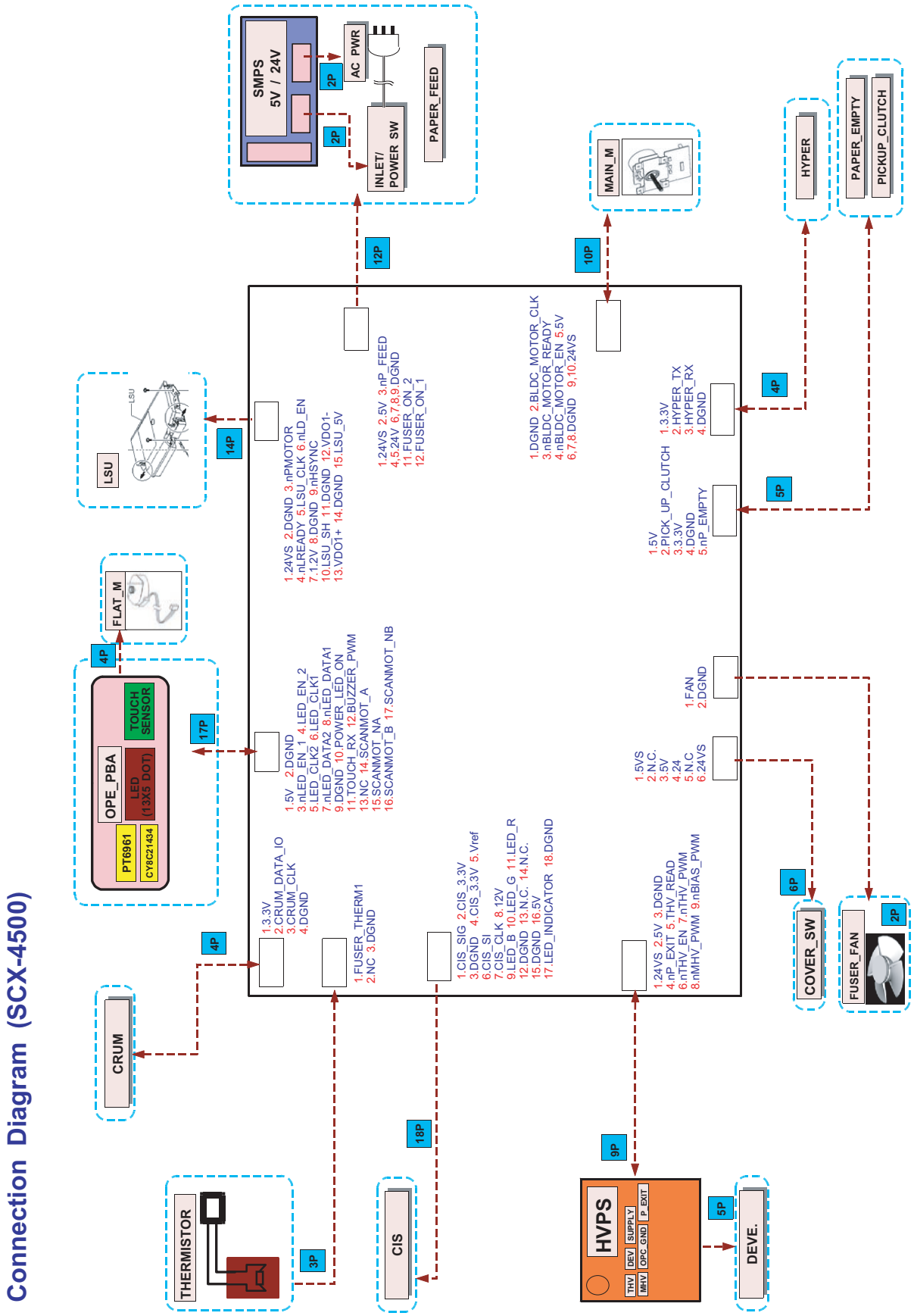
Drawer#	SEC_Code	Description	QT'y	Service	Remark
5.9-0	JC97-02933A	MEA UNIT-CASSETTE	1	Y	
5.9-1	JC61-02081A	FRAME-CST	1	Y	
5.9-2	JC61-02126A	GUIDE-REAR	1	Y	
5.9-3	6107-001350	SPRING-CS	2	Y	
5.9-4	JC61-02111A	GUIDE-CASSETTE LOCK	2	Y	
5.9-6	JC63-01432A	COVER-CASSETTE	1	Y	
5.9-7	JG66-40003A	GEAR-PINION	1	Y	
5.9-8	6003-000264	SCREW-TAPTITE	1	Y	
5.9-9	JC61-02124A	GUIDE-SIDE L	1	Y	
5.9-10	JC61-02125A	GUIDE-SIDE R	1	Y	
5.9-11	JG61-70531A	SPRING ETC-LOCKER,PLATE	2	Y	
5.9-12	JC61-02128A	GUIDE-KNOCKUP R	1	Y	
5.9-13	JC61-02127A	GUIDE-KNOCKUP L	1	Y	
5.9-14	6107-001349	SPRING-CS	2	Y	
5.9-15	JC61-02080A	PLATE-KNOCKUP	1	Y	
5.9-16	JC73-00141A	RPR-PAD CASSETTE	2	Y	
5.9-17	JC66-00720A	SHAFT-P-CORE	1	Y	

6. System Diagram

6.1 Block Diagram



6.2 Connection Diagram



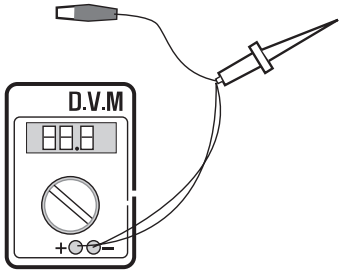
7. Reference Information

This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of tests pages and Wireless Network information definition is also included.

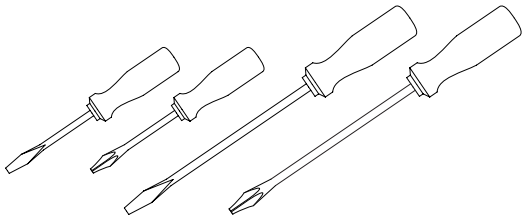
7.1 Tool for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.

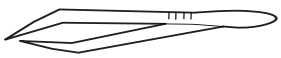
- **DVM (Digital Volt Meter)**
  Standard : Indicates more than 3 digits.



- **Driver**
  Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).

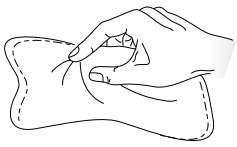


- **Tweezers**
  Standard : For general home use, small type.

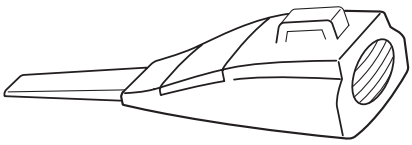


- **Cotton Swab**
  Standard : For general home use, for medical service.

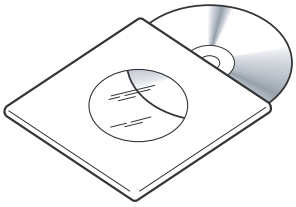
- **Cleaning Equipments**
  Standard : An IPA(Isopropyl Alcohol)dry wipe tissue or a gentle neutral detergent and lint-free cloth.



- **Vacuum Cleaner**



- **Software (Driver) installation CD ROM**



7.2 Acronyms and Abbreviations(1)

The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

Abbreviations	Explanation
AP	Access Point
AC	Alternating Current
APC	Auto Power Control
ASIC	Application Specific Integrated Circuit
ASSY	assembly
BIOS	Basic Input Output System
BLDC	Brush-less Direct Current
CMOS	Complementary Metal Oxide Semiconductor
CN	connector
CON	connector
CPU	Central Processing Unit
dB	decibel
dBA	decibel A
dBM	decibel milliwatt
DC	direct current
DCU	Diagnostic Control Unit
DPI	Dot Per Inch
DRAM	Dynamic Random Access Memory
DVM	Digital Voltmeter
ECP	Enhanced Capability Port
EDC	Embedded Diagnostic control
EEPROM	Electronically Erasable Programmable Read Only Memory
EMI	Electro Magnetic Interference
EP	electrophotographic
EPP	Enhanced Parallel Port
FPOT	First Printout Time
F/W	firmware
GDI	graphics device interface
GND	ground
HBP	Host Based Printing
HDD	Hard Disk Drive
H/H	High temperature and high marshy place
HV	high voltage
HVPS	High Voltage Power Supply
I/F	interface
I/O	Input and Output
IC	integrated circuit
IDE	Intelligent Drive electronics or Imbedded Drive Electronics

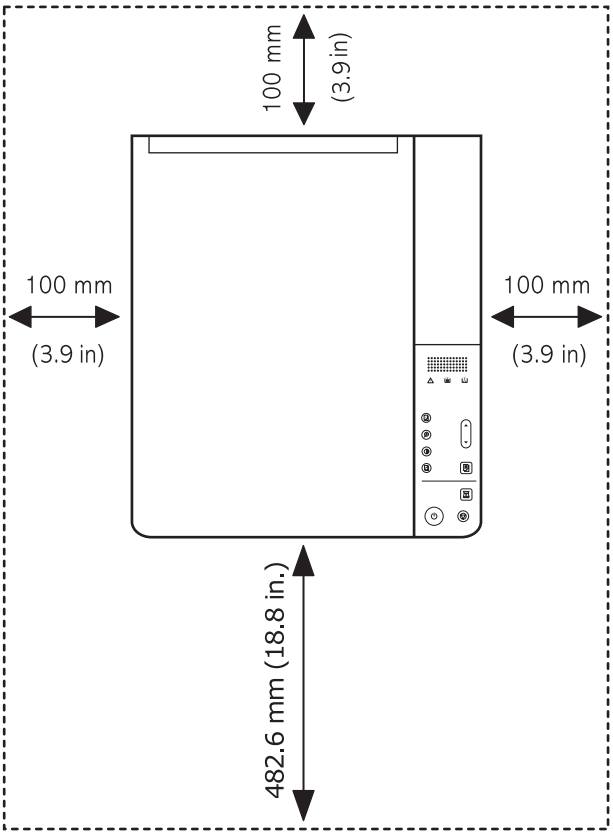
Acronyms and Abbreviations(2)

Abbreviations	Explanation
IEEE	Institute of Electrical and Electronics Engineers. Inc
IPA	Isopropy Alcohol
IPM	Images Per Minute
LAN	local area network
lb	pound(s)
LBP	Laser Beam Printer
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L	Low temperature and low marshy place
LSU	Laser Scanning Unit
MB	megabyte
MHz	megahertz
MPF	Multi Purpose Feeder
NIC	Network Interface Card
N/N	Normal temperature and normal marshy place
NVRAM	nonvolatile random access memory
OPC	Organic Photo Conductor
OP	Operation Panel Equipment
PBA	Printed Board Assembly
PCL	Printer Command Language , Printer Control Language
PDL	Page Discription Language
PPM	Page Per Minute
PPS	Pulse Per Second
PS	Post Script
PTL	Pre-Transfer Lamp
PWM	Pulse Width Modulation
Q-PID	Quick Printer Initiating Device
Q'ty	quantity
RAM	Random Access Memory
ROM	Read Only Memory
SCF	Second Cassette Feeder
SMPS	Switching Mode Power Supply
SPGP	Samsung Printer Graphic Processor
SPL	Samsung Printer Language
Spool	Simultaneous Peripheral Operation Online
SW	switch
sync	synchronous or synchronization
USB	Universal Serial Bus
WECA	Wireless Ethernet Compatibility Alliance

7.3 Select a location for the printer

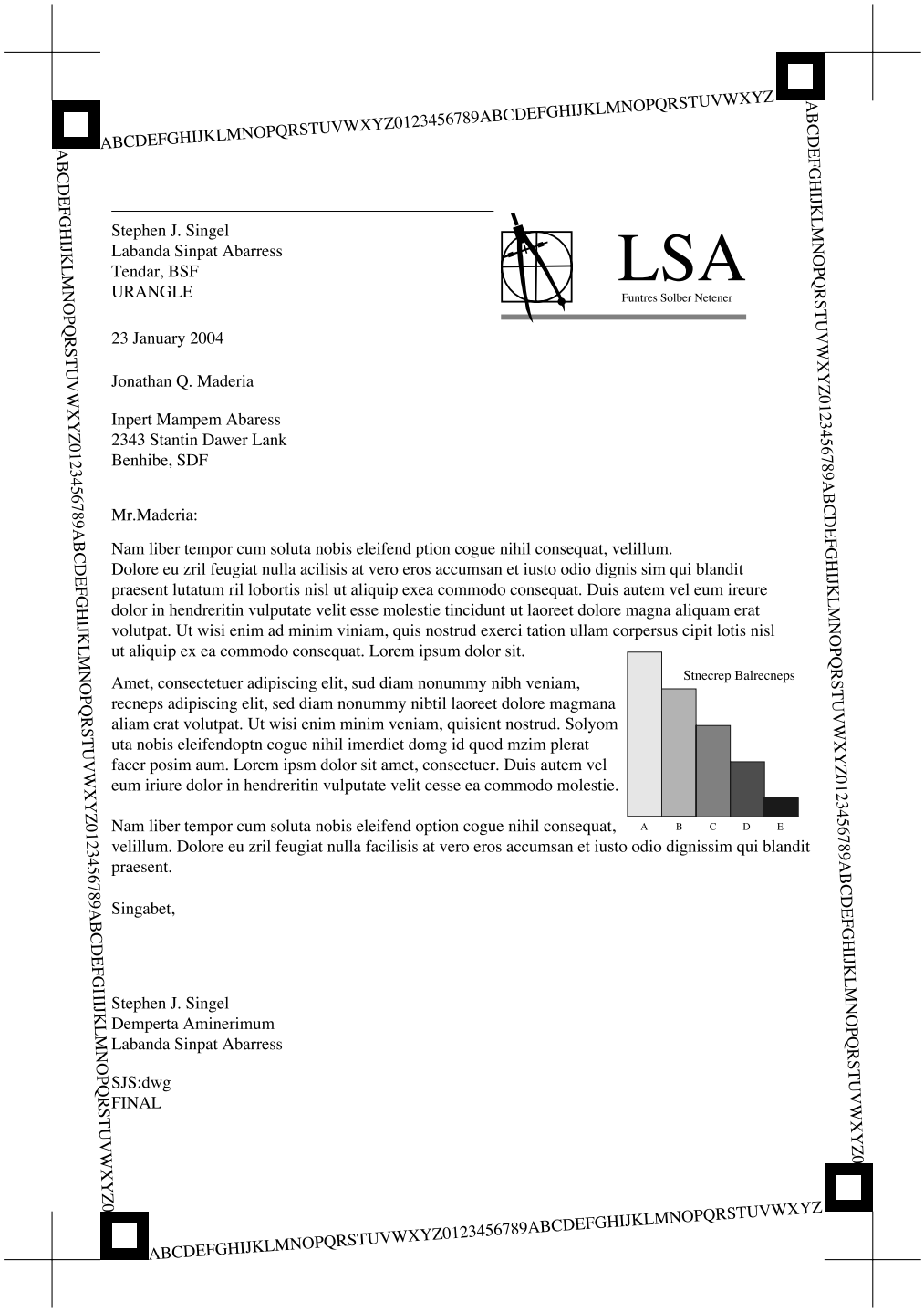
• Leave enough room to open the printer trays, covers, and allow for proper ventilation. (see diagram below)

• Provide the proper environment :
- A firm, level surface
- Away from the direct airflow of air conditioners, heaters, or ventilators
- Free of extreme fluctuations of temperature, sunlight, or humidity
- Clean, dry, and free of dust



7.4 Sample Tests Patterns

The sample patterns shown below are the standard test patterns used in the factory.
The life of the toner cartridge, developer cartridge and printing speed are measured with the pattern shown below (5%). The A4 ISO 19752 standard pattern samples are reproduced reduced to 70% of the actual A4 size.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7.5 Parts Life Cycle Maintenance Table

7.5.1 Parts Life Cycle Maintenance Table

Supplies	Life Cycle	Condition	Engine Codition	Status Display	Custmoer Panel Manage	Responding
Toner Cartridge	1K : For Product 2K : For Sale	Toner Low	Warning	Animation Indication	-	10% Remains
		Toner Empty	Warning	Animation Indication	-	Initialized at toner change
Fuser	50K(page) :Simplex	Exhauseted	No Indication	No Indication	Replaced at Exhauseted	
Transer Roller	50K(page) :Simplex	Exhauseted	No Indication	No Indication	Replaced at Exhauseted	
PickUP Roller	50K(page) :Simplex	Exhauseted	No Indication	No Indication	Replaced at Exhauseted	

7.5.2 Toner Cartridge Criterion

1) Supplies Criterion (Toner Cartridge)
   1. Cartridge Main Defects
      - White Point, Black Point : White or Black point on printing image
      - Image contamination : Dirty printing image
      - Image Fainted : Entire Image is fainted and vertical white line emerge
      - Black Line : Vertical black line emerge on printing image

2) Defect Symptoms

Symptoms	Criterion	Remarks
White, Black Point	Clean Up OPC (10 times), if disappeared, no failure. - If continuous, failure	
Image contamination (Toner leakage)	Drity printing image or conteminated reverse side - Clean up OPC (10 times) and inside of machine with cloth, if disappeared, no failure.	
Image Fainted	After shake cartridge right and left 5~6 times, if printing image is not fainted, no failure. (Toner Exhausted)	
Vertical Black Line	Vertical thin line emerge, if cartridge is scratched. - (Customer fault)	

7.6 Model Information

7.6.1 Understanding for Model Code

Model code is inscribed and managed by product standard operation.
If understand the standard operation. It will help to comprehend basic and derived model.

Classification	Model abbriviation				Feature/Properties					
DIGIT	1	2	3	4	5	6	7	8	9	10
Example	S	C	X	-	4	5	0	0		
Definition	Product Classification			Division between code	1. Speed of Engine - If same speed models are released simultaneously higher model is added +1 at speed code. - If over 10 models with same speed are brought into, tenth model is added +1.	1.New model, series	Copy Speed (Default A4) - If over 10 models with same speed are brought into, tenth model is added +1.		Main feature description - N : N/W - P : PS - S : N/W+PS - B : Bluetooth - T : 2nd CST - M : Mac Compatible - X : Scanner • Beside above feature description, product conception to product planning group responsed	Space (Basic: Omitted)
Code Description	S:Samsung	C:Copier	X:Fax							
Description	Alphabet			-	Digit				Alphabet	

7.6.2 Understanding Material Code & Name

Material code and name is maintained by standard criteria.
If understand the criteria, it will help to order materials.
1. Two different description ways for material code. (●: Digit, ■ : Letter(Alphabet))

- Type 1 ●●●●-●●●●●● ex) 2007-007961 R-CHIP
- Type 2 ■■●●-●●●●●■ ex)JB96-01268A ELA UNIT-COVER TOP

Type1 : Parts managed by entire divisions : Materials used by all samsung products.
Most electrical parts are under the type 1.

Type 2 : Parts managed by a division : Material used by a certain product
Most mechanical parts are under type 2.

2. A/S Only material : Only for A/S, not related to product manufacturing.

3. Ass'y material : More than two materials are assembled. If the material order is out of service, the order can be processed by Ass'y material order.
Picture and numbers are also described on Service manual.

※ Ass'y Material and A/S Only material Code are recognizable by product name.
Those are under type 2 and known by material properties and beginning letters of product name.

Classification	Material Code	Material Name
A/S Only Material	**81-******(JB81-00039A)	AS-*****(AS-FUSE)
A/S Only Material	**75-******(JB75-00068A)	MEC-*****(MEC-CHUTE)
A/S Only Material	**92-******(JB92-01131A)	PBA-*****(PBA MAIN-CONTROLLER)
A/S Only Material	**96-******(JB96-01268A)	ELA-*****(ELA UNIT-COVER TOP)
A/S Only Material	**97-******(JB97-01089A)	MEA-*****(MEA UNIT-PULLEY IDLE)

7.6.3 F/W Upgrade Method

※ If F/W needs Upgrade, F/W file and usbprn file are requested.

■ Check "Ready" condition with power ON.

1. Paralle cable case
   - Start Download Rom file with "copy/b file name.fls lpt1:" commend on Dos Mode.
   - Once Download are finished, "Reset Printer" is indicated on LCD window.
   - Download finished ▶ Power ON/OFF.

2. USB cable case (Save attached file at certain directory)
   - Start Download Rom file "usbprbs file name.fls" on Dos Mode and push the enter key
   - Once Download are finished, "Reset Printer" is indicated on LCD window.
   - Download finished ▶ Power ON/OFF.

ELECTRONICS

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